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Form 990

Department of the TreasuryInternal Revenue Service

Return of Organization Exempt From Income Tax

Under section 501(c), 527, or 4947(a)(1) of the Internal Revenue Code (except private foundations)

Do not enter social security numbers on this form as it may be made public.

Go to www.irs.gov/Form990 for instructions and the latest information.

OMB No. 1545-0047

2018

Open to Public Inspection

A For the 2019 calendar year, or tax year beginning 12-01-2018 , and ending 11-30-2019

B Check if applicable:

☐ Address change

☐ Name change

☐ Initial return

☐ Final return/terminated

☐ Amended return

☐ Application pending

C Name of organization

VAN ANDEL RESEARCH INSTITUTE

Doing business as

Number and street (or P.O. box if mail is not delivered to street address)Room/suite

333 BOSTWICK AVENUE NE

City or town, state or province, country, and ZIP or foreign postal code

GRAND RAPIDS, MI 49503

F Name and address of principal officer:

TIMOTHY J MYERS

333 BOSTWICK AVENUE NE

GRAND RAPIDS, MI 49503

D Employer identification number

52-2000823

E Telephone number

(616) 234-5000

G Gross receipts \$ 86,593,892

I Tax-exempt status:

☒ 501(c)(3)

☐ 501(c) () (insert no.)

☐ 4947(a)(1) or

☐ 527

J Website: WWW.VAI.ORG

K Form of organization:

☐ Corporation

☒ Trust

☐ Association

☐ Other

L Year of formation: 1996

M State of legal domicile: MI

Part I

Summary

Activities & Governance

1 Briefly describe the organization's mission or most significant activities:

MEDICAL RESEARCH ORGANIZATION

2 Check this box ☐ if the organization discontinued its operations or disposed of more than 25% of its net assets.

3 Number of voting members of the governing body (Part VI, line 1a)

4 Number of independent voting members of the governing body (Part VI, line 1b)

5 Total number of individuals employed in calendar year 2018 (Part V, line 2a)

6 Total number of volunteers (estimate if necessary)

7a Total unrelated business revenue from Part VIII, column (C), line 12

7b Net unrelated business taxable income from Form 990-T, line 34

Revenue

8 Contributions and grants (Part VIII, line 1h)

9 Program service revenue (Part VIII, line 2g)

10 Investment income (Part VIII, column (A), lines 3, 4, and 7d)

11 Other revenue (Part VIII, column (A), lines 5, 6d, 8c, 9c, 10c, and 11e)

12 Total revenue—add lines 8 through 11 (must equal Part VIII, column (A), line 12)

Expenses

13 Grants and similar amounts paid (Part IX, column (A), lines 1–3)

14 Benefits paid to or for members (Part IX, column (A), line 4)

15 Salaries, other compensation, employee benefits (Part IX, column (A), lines 5–10)

16a Professional fundraising fees (Part IX, column (A), line 11e)

16b Total fundraising expenses (Part IX, column (D), line 25) 1,082,212

17 Other expenses (Part IX, column (A), lines 11a–11d, 11f–24e)

18 Total expenses. Add lines 13–17 (must equal Part IX, column (A), line 25)

19 Revenue less expenses. Subtract line 18 from line 12

Net Assets or Fund Balances

20 Total assets (Part X, line 16)

21 Total liabilities (Part X, line 26)

22 Net assets or fund balances. Subtract line 21 from line 20

Part II

Signature Block

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. Declaration of preparer (other than officer) is based on all information of which preparer has any knowledge.

Sign Here

Signature of officer

TIMOTHY J MYERS VICE PRESIDENT & CFO

2020-10-09

Date

Paid Preparer Use Only

Print/Type preparer's name

Preparer's signature

Date

Check ☐ if self-employed

PTIN P00941863

Firm's name

Firm's EIN

Firm's address

Phone no.

May the IRS discuss this return with the preparer shown above? (see instructions)

☒ Yes

☐ No

For Paperwork Reduction Act Notice, see the separate instructions.

Cat. No. 11282Y

Form 990 (2018)

Part III Statement of Program Service AccomplishmentsCheck if Schedule O contains a response or note to any line in this Part III ☒**1** Briefly describe the organization's mission:

MEDICAL RESEARCH ORGANIZATION VAN ANDEL RESEARCH INSTITUTE IS AN INDEPENDENT BIOMEDICAL RESEARCH ORGANIZATION COMMITTED TO IMPROVING THE HEALTH AND ENHANCING THE LIVES OF CURRENT AND FUTURE GENERATIONS.

2 Did the organization undertake any significant program services during the year which were not listed on the prior Form 990 or 990-EZ? ☐ Yes ☒ No

If "Yes," describe these new services on Schedule O.

3 Did the organization cease conducting, or make significant changes in how it conducts, any program services? ☐ Yes ☒ No

If "Yes," describe these changes on Schedule O.

4 Describe the organization's program service accomplishments for each of its three largest program services, as measured by expenses. Section 501(c)(3) and 501(c)(4) organizations are required to report the amount of grants and allocations to others, the total expenses, and revenue, if any, for each program service reported.

4a	(Code:) (Expenses \$	12,457,371	including grants of \$	530,680) (Revenue \$	218,058)
	See Additional Data				

4b	(Code:) (Expenses \$	12,490,385	including grants of \$	1,726,966) (Revenue \$	103,794)
	See Additional Data				

4c	(Code:) (Expenses \$	8,133,555	including grants of \$	155,194) (Revenue \$	144,168)
	See Additional Data				

	(Code:) (Expenses \$	32,752,691	including grants of \$	20,258) (Revenue \$	1,413,626)
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4d	Other program services (Describe in Schedule O.)				
	(Expenses \$	32,752,691	including grants of \$	20,258) (Revenue \$	1,413,626)

4e	Total program service expenses ▶	65,834,002			
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Part IV Checklist of Required Schedules

	Yes	No
1 Is the organization described in section 501(c)(3) or 4947(a)(1) (other than a private foundation)? If "Yes," complete Schedule A	1 Yes	
2 Is the organization required to complete Schedule B, Schedule of Contributors (see instructions)?	2 Yes	
3 Did the organization engage in direct or indirect political campaign activities on behalf of or in opposition to candidates for public office? If "Yes," complete Schedule C, Part I	3	No
4 Section 501(c)(3) organizations. Did the organization engage in lobbying activities, or have a section 501(h) election in effect during the tax year? If "Yes," complete Schedule C, Part II	4 Yes	
5 Is the organization a section 501(c)(4), 501(c)(5), or 501(c)(6) organization that receives membership dues, assessments, or similar amounts as defined in Revenue Procedure 98-19? If "Yes," complete Schedule C, Part III	5	No
6 Did the organization maintain any donor advised funds or any similar funds or accounts for which donors have the right to provide advice on the distribution or investment of amounts in such funds or accounts? If "Yes," complete Schedule D, Part I	6	No
7 Did the organization receive or hold a conservation easement, including easements to preserve open space, the environment, historic land areas, or historic structures? If "Yes," complete Schedule D, Part II	7	No
8 Did the organization maintain collections of works of art, historical treasures, or other similar assets? If "Yes," complete Schedule D, Part III	8	No
9 Did the organization report an amount in Part X, line 21 for escrow or custodial account liability; serve as a custodian for amounts not listed in Part X; or provide credit counseling, debt management, credit repair, or debt negotiation services? If "Yes," complete Schedule D, Part IV	9	No
10 Did the organization, directly or through a related organization, hold assets in temporarily restricted endowments, permanent endowments, or quasi-endowments? If "Yes," complete Schedule D, Part V	10 Yes	
11 If the organization's answer to any of the following questions is "Yes," then complete Schedule D, Parts VI, VII, VIII, IX, or X as applicable.		
a Did the organization report an amount for land, buildings, and equipment in Part X, line 10? If "Yes," complete Schedule D, Part VI.	11a Yes	
b Did the organization report an amount for investments—other securities in Part X, line 12 that is 5% or more of its total assets reported in Part X, line 16? If "Yes," complete Schedule D, Part VII	11b	No
c Did the organization report an amount for investments—program related in Part X, line 13 that is 5% or more of its total assets reported in Part X, line 16? If "Yes," complete Schedule D, Part VIII	11c	No
d Did the organization report an amount for other assets in Part X, line 15 that is 5% or more of its total assets reported in Part X, line 16? If "Yes," complete Schedule D, Part IX	11d Yes	
e Did the organization report an amount for other liabilities in Part X, line 25? If "Yes," complete Schedule D, Part X	11e Yes	
f Did the organization's separate or consolidated financial statements for the tax year include a footnote that addresses the organization's liability for uncertain tax positions under FIN 48 (ASC 740)? If "Yes," complete Schedule D, Part X	11f Yes	
12a Did the organization obtain separate, independent audited financial statements for the tax year? If "Yes," complete Schedule D, Parts XI and XII	12a	No
b Was the organization included in consolidated, independent audited financial statements for the tax year? If "Yes," and if the organization answered "No" to line 12a, then completing Schedule D, Parts XI and XII is optional	12b Yes	
13 Is the organization a school described in section 170(b)(1)(A)(ii)? If "Yes," complete Schedule E	13	No
14a Did the organization maintain an office, employees, or agents outside of the United States?	14a Yes	
b Did the organization have aggregate revenues or expenses of more than \$10,000 from grantmaking, fundraising, business, investment, and program service activities outside the United States, or aggregate foreign investments valued at \$100,000 or more? If "Yes," complete Schedule F, Parts I and IV	14b Yes	
15 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of grants or other assistance to or for any foreign organization? If "Yes," complete Schedule F, Parts II and IV	15	No
16 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of aggregate grants or other assistance to or for foreign individuals? If "Yes," complete Schedule F, Parts III and IV	16	No
17 Did the organization report a total of more than \$15,000 of expenses for professional fundraising services on Part IX, column (A), lines 6 and 11e? If "Yes," complete Schedule G, Part I (see instructions)	17	No
18 Did the organization report more than \$15,000 total of fundraising event gross income and contributions on Part VIII, lines 1c and 8a? If "Yes," complete Schedule G, Part II	18 Yes	
19 Did the organization report more than \$15,000 of gross income from gaming activities on Part VIII, line 9a? If "Yes," complete Schedule G, Part III	19	No
20a Did the organization operate one or more hospital facilities? If "Yes," complete Schedule H	20a	No
b If "Yes" to line 20a, did the organization attach a copy of its audited financial statements to this return?	20b	
21 Did the organization report more than \$5,000 of grants or other assistance to any domestic organization or domestic government on Part IX, column (A), line 1? If "Yes," complete Schedule I, Parts I and II	21 Yes	
22 Did the organization report more than \$5,000 of grants or other assistance to or for domestic individuals on Part IX, column (A), line 2? If "Yes," complete Schedule I, Parts I and III	22 Yes	

Part IV Checklist of Required Schedules (continued)

		Yes	No
23	Did the organization answer "Yes" to Part VII, Section A, line 3, 4, or 5 about compensation of the organization's current and former officers, directors, trustees, key employees, and highest compensated employees? <i>If "Yes," complete Schedule J</i>	23 Yes	
24a	Did the organization have a tax-exempt bond issue with an outstanding principal amount of more than \$100,000 as of the last day of the year, that was issued after December 31, 2002? <i>If "Yes," answer lines 24b through 24d and complete Schedule K. If "No," go to line 25a</i>	24a Yes	
b	Did the organization invest any proceeds of tax-exempt bonds beyond a temporary period exception?	24b	No
c	Did the organization maintain an escrow account other than a refunding escrow at any time during the year to defease any tax-exempt bonds?	24c	No
d	Did the organization act as an "on behalf of" issuer for bonds outstanding at any time during the year?	24d	No
25a	Section 501(c)(3), 501(c)(4), and 501(c)(29) organizations. Did the organization engage in an excess benefit transaction with a disqualified person during the year? <i>If "Yes," complete Schedule L, Part I</i>	25a	No
b	Is the organization aware that it engaged in an excess benefit transaction with a disqualified person in a prior year, and that the transaction has not been reported on any of the organization's prior Forms 990 or 990-EZ? <i>If "Yes," complete Schedule L, Part I</i>	25b	No
26	Did the organization report any amount on Part X, line 5, 6, or 22 for receivables from or payables to any current or former officers, directors, trustees, key employees, highest compensated employees, or disqualified persons? <i>If "Yes," complete Schedule L, Part II</i>	26	No
27	Did the organization provide a grant or other assistance to an officer, director, trustee, key employee, substantial contributor or employee thereof, a grant selection committee member, or to a 35% controlled entity or family member of any of these persons? <i>If "Yes," complete Schedule L, Part III</i>	27	No
28	Was the organization a party to a business transaction with one of the following parties (see Schedule L, Part IV instructions for applicable filing thresholds, conditions, and exceptions):		
a	A current or former officer, director, trustee, or key employee? <i>If "Yes," complete Schedule L, Part IV</i>	28a	No
b	A family member of a current or former officer, director, trustee, or key employee? <i>If "Yes," complete Schedule L, Part IV</i>	28b	No
c	An entity of which a current or former officer, director, trustee, or key employee (or a family member thereof) was an officer, director, trustee, or direct or indirect owner? <i>If "Yes," complete Schedule L, Part IV</i>	28c	No
29	Did the organization receive more than \$25,000 in non-cash contributions? <i>If "Yes," complete Schedule M</i>	29 Yes	
30	Did the organization receive contributions of art, historical treasures, or other similar assets, or qualified conservation contributions? <i>If "Yes," complete Schedule M</i>	30	No
31	Did the organization liquidate, terminate, or dissolve and cease operations? <i>If "Yes," complete Schedule N, Part I</i>	31	No
32	Did the organization sell, exchange, dispose of, or transfer more than 25% of its net assets? <i>If "Yes," complete Schedule N, Part II</i>	32	No
33	Did the organization own 100% of an entity disregarded as separate from the organization under Regulations sections 301.7701-2 and 301.7701-3? <i>If "Yes," complete Schedule R, Part I</i>	33 Yes	
34	Was the organization related to any tax-exempt or taxable entity? <i>If "Yes," complete Schedule R, Part II, III, or IV, and Part V, line 1</i>	34 Yes	
35a	Did the organization have a controlled entity within the meaning of section 512(b)(13)?	35a Yes	
b	If 'Yes' to line 35a, did the organization receive any payment from or engage in any transaction with a controlled entity within the meaning of section 512(b)(13)? <i>If "Yes," complete Schedule R, Part V, line 2</i>	35b Yes	
36	Section 501(c)(3) organizations. Did the organization make any transfers to an exempt non-charitable related organization? <i>If "Yes," complete Schedule R, Part V, line 2</i>	36	No
37	Did the organization conduct more than 5% of its activities through an entity that is not a related organization and that is treated as a partnership for federal income tax purposes? <i>If "Yes," complete Schedule R, Part VI</i>	37	No
38	Did the organization complete Schedule O and provide explanations in Schedule O for Part VI, lines 11b and 19? Note. All Form 990 filers are required to complete Schedule O.	38 Yes	

Part V Statements Regarding Other IRS Filings and Tax ComplianceCheck if Schedule O contains a response or note to any line in this Part V ☐

		Yes	No
1a	Enter the number reported in Box 3 of Form 1096 Enter -0- if not applicable	1a 123	
b	Enter the number of Forms W-2G included in line 1a. Enter -0- if not applicable	1b 0	
c	Did the organization comply with backup withholding rules for reportable payments to vendors and reportable gaming (gambling) winnings to prize winners?	1c	

Form **990** (2018)

Part VI Governance, Management, and Disclosure For each "Yes" response to lines 2 through 7b below, and for a "No" response to lines 8a, 8b, or 10b below, describe the circumstances, processes, or changes in Schedule O. See instructions.
Check if Schedule O contains a response or note to any line in this Part VI ☒

Section A. Governing Body and Management

		Yes	No
1a Enter the number of voting members of the governing body at the end of the tax year	1a 6		
If there are material differences in voting rights among members of the governing body, or if the governing body delegated broad authority to an executive committee or similar committee, explain in Schedule O.			
b Enter the number of voting members included in line 1a, above, who are independent	1b 5		
2 Did any officer, director, trustee, or key employee have a family relationship or a business relationship with any other officer, director, trustee, or key employee?	2	Yes	
3 Did the organization delegate control over management duties customarily performed by or under the direct supervision of officers, directors or trustees, or key employees to a management company or other person?	3		No
4 Did the organization make any significant changes to its governing documents since the prior Form 990 was filed?	4		No
5 Did the organization become aware during the year of a significant diversion of the organization's assets?	5		No
6 Did the organization have members or stockholders?	6		No
7a Did the organization have members, stockholders, or other persons who had the power to elect or appoint one or more members of the governing body?	7a	Yes	
b Are any governance decisions of the organization reserved to (or subject to approval by) members, stockholders, or persons other than the governing body?	7b		No
8 Did the organization contemporaneously document the meetings held or written actions undertaken during the year by the following:			
a The governing body?	8a	Yes	
b Each committee with authority to act on behalf of the governing body?	8b	Yes	
9 Is there any officer, director, trustee, or key employee listed in Part VII, Section A, who cannot be reached at the organization's mailing address? If "Yes," provide the names and addresses in Schedule O	9		No

Section B. Policies (This Section B requests information about policies not required by the Internal Revenue Code.)

	Yes	No
10a Did the organization have local chapters, branches, or affiliates?	10a	No
b If "Yes," did the organization have written policies and procedures governing the activities of such chapters, affiliates, and branches to ensure their operations are consistent with the organization's exempt purposes?	10b	
11a Has the organization provided a complete copy of this Form 990 to all members of its governing body before filing the form?	11a	Yes
b Describe in Schedule O the process, if any, used by the organization to review this Form 990.		
12a Did the organization have a written conflict of interest policy? If "No," go to line 13	12a	Yes
b Were officers, directors, or trustees, and key employees required to disclose annually interests that could give rise to conflicts?	12b	Yes
c Did the organization regularly and consistently monitor and enforce compliance with the policy? If "Yes," describe in Schedule O how this was done	12c	Yes
13 Did the organization have a written whistleblower policy?	13	Yes
14 Did the organization have a written document retention and destruction policy?	14	Yes
15 Did the process for determining compensation of the following persons include a review and approval by independent persons, comparability data, and contemporaneous substantiation of the deliberation and decision?		
a The organization's CEO, Executive Director, or top management official	15a	Yes
b Other officers or key employees of the organization	15b	Yes
If "Yes" to line 15a or 15b, describe the process in Schedule O (see instructions).		
16a Did the organization invest in, contribute assets to, or participate in a joint venture or similar arrangement with a taxable entity during the year?	16a	No
b If "Yes," did the organization follow a written policy or procedure requiring the organization to evaluate its participation in joint venture arrangements under applicable federal tax law, and take steps to safeguard the organization's exempt status with respect to such arrangements?	16b	

Section C. Disclosure

17 List the States with which a copy of this Form 990 is required to be filed **MI**

18 Section 6104 requires an organization to make its Form 1023 (or 1024-A if applicable), 990, and 990-T (501(c)(3)s only) available for public inspection. Indicate how you made these available. Check all that apply.
☐ Own website ☐ Another's website ☒ Upon request ☐ Other (explain in Schedule O)

19 Describe in Schedule O whether (and if so, how) the organization made its governing documents, conflict of interest policy, and financial statements available to the public during the tax year.

20 State the name, address, and telephone number of the person who possesses the organization's books and records:
TIMOTHY J MYERS VP & CFO 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 (616) 234-5368

Part VII**Compensation of Officers, Directors, Trustees, Key Employees, Highest Compensated Employees, and Independent Contractors**Check if Schedule O contains a response or note to any line in this Part VII ☐**Section A. Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees****1a** Complete this table for all persons required to be listed. Report compensation for the calendar year ending with or within the organization's tax year.

- List all of the organization's **current** officers, directors, trustees (whether individuals or organizations), regardless of amount of compensation. Enter -0- in columns (D), (E), and (F) if no compensation was paid.

- List all of the organization's **current** key employees, if any. See instructions for definition of "key employee."

- List the organization's five **current** highest compensated employees (other than an officer, director, trustee or key employee) who received reportable compensation (Box 5 of Form W-2 and/or Box 7 of Form 1099-MISC) of more than \$100,000 from the organization and any related organizations.

- List all of the organization's **former** officers, key employees, or highest compensated employees who received more than \$100,000 of reportable compensation from the organization and any related organizations.

- List all of the organization's **former directors or trustees** that received, in the capacity as a former director or trustee of the organization, more than \$10,000 of reportable compensation from the organization and any related organizations.

List persons in the following order: individual trustees or directors; institutional trustees; officers; key employees; highest compensated employees; and former such persons.

☐ Check this box if neither the organization nor any related organization compensated any current officer, director, or trustee.

(A) Name and Title	(B) Average hours per week (list any hours for related organizations below dotted line)	(C) Position (do not check more than one box, unless person is both an officer and a director/trustee)						(D) Reportable compensation from the organization (W-2/1099-MISC)	(E) Reportable compensation from related organizations (W-2/1099-MISC)	(F) Estimated amount of other compensation from the organization and related organizations
		Individual trustee or director	Institutional Trustee	Officer	Key employee	Highest compensated employee	Former			
(1) DAVID VAN ANDEL CHAIRMAN / CEO	36.00 17.00	X		X				510,007	0	112,315
(2) DR GEORGE VANDE WOUDE TRUSTEE	1.00 0.00	X						8,000	0	0
(3) DR JAMES FAHNER TRUSTEE	1.00 1.00	X						8,000	3,000	0
(4) DR MAX WICHA TRUSTEE	1.00 0.00	X						8,000	0	0
(5) DR MICHELLE LEBEAU TRUSTEE	1.00 0.00	X						7,000	0	0
(6) DR TOM DEMEESTER TRUSTEE	1.00 0.00	X						8,000	0	0
(7) DR JANA HALL CHIEF OPERATIONS OFFICER	52.00 1.00			X				457,885	0	110,728
(8) TIMOTHY MYERS V.P. & CHIEF FINANCIAL OFFICER	50.00 3.00			X				334,088	0	85,549
(9) DR PETER JONES CHIEF SCIENTIFIC OFFICER & RES. DIR.	52.00 1.00				X			736,084	0	168,951
(10) KATHY VOGELSANG CHIEF INVESTMENT OFFICER	45.00 0.00					X		769,994	0	288,450
(11) DR PATRIK BRUNDIN ASSOCIATE RESEARCH DIRECTOR	45.00 0.00					X		513,904	0	87,587
(12) DR PETER LAIRD INVESTIGATOR	45.00 0.00					X		410,026	0	55,027
(13) TED HEILMAN ASSOC DIRECT-SR. PORTFOLIO MGR.	45.00 0.00					X		453,788	0	179,418
(14) DR SCOTT JEWELL DIR. PROGRAM FOR TECHNOLOGIES & CORES	53.00 0.00					X		376,114	0	79,166

Part VII Section A. Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees (continued)

(A) Name and Title	(B) Average hours per week (list any hours for related organizations below dotted line)	(C) Position (do not check more than one box, unless person is both an officer and a director/trustee)						(D) Reportable compensation from the organization (W-2/1099-MISC)	(E) Reportable compensation from related organizations (W-2/1099-MISC)	(F) Estimated amount of other compensation from the organization and related organizations
		Individual trustee or director	Institutional Trustee	Officer	Key employee	Highest compensated employee	Former			
1b Sub-Total										
c Total from continuation sheets to Part VII, Section A										
d Total (add lines 1b and 1c)								4,600,890	3,000	1,167,191

2 Total number of individuals (including but not limited to those listed above) who received more than \$100,000 of reportable compensation from the organization ► 85

		Yes	No
3	Did the organization list any former officer, director or trustee, key employee, or highest compensated employee on line 1a? <i>If "Yes," complete Schedule J for such individual</i>	3	No
4	For any individual listed on line 1a, is the sum of reportable compensation and other compensation from the organization and related organizations greater than \$150,000? <i>If "Yes," complete Schedule J for such individual</i>	4	Yes
5	Did any person listed on line 1a receive or accrue compensation from any unrelated organization or individual for services rendered to the organization? <i>If "Yes," complete Schedule J for such person</i>	5	No

Section B. Independent Contractors

1 Complete this table for your five highest compensated independent contractors that received more than \$100,000 of compensation from the organization. Report compensation for the calendar year ending with or within the organization's tax year.

(A)	(B)	(C)
Name and business address	Description of services	Compensation
OWENS-AMES-KIMBALL CO 300 IONIA AVENUE NW GRAND RAPIDS, MI 49503	CONSTRUCTION SERVICES	316,630
DE LAGE LANDEN FIN SVCS INC 1111 OLD EAGLE SCHOOL ROAD WAYNE, PA 19087	EQUIPMENT LEASING	301,452
BLUE ROSE CAPITAL ADVISORS LLC 6400 FLYING CLOUD DR STE 212 MINNEAPOLIS, MN 55344	CONSULTING SERVICES	298,000
ALLIED UNIVERSAL SECURITY PO BOX 828854 PHILADELPHIA, PA 191828854	SECURITY SERVICES	244,634
FEDERAL EXPRESS PO BOX 371461 PITTSBURGH, PA 152512125	SHIPPING SERVICES	189,276

2 Total number of independent contractors (including but not limited to those listed above) who received more than \$100,000 of compensation from the organization ► 14

Part VIII Statement of Revenue

Check if Schedule O contains a response or note to any line in this Part VIII ☐

Contributions, Gifts, Grants
and Other Similar Amounts

		(A) Total revenue	(B) Related or exempt function revenue	(C) Unrelated business revenue	(D) Revenue excluded from tax under sections 512 - 514
1a Federated campaigns . . .	1a				
b Membership dues . . .	1b				
c Fundraising events . . .	1c	163,791			
d Related organizations	1d	49,750,429			
e Government grants (contributions)	1e	19,234,765			
f All other contributions, gifts, grants, and similar amounts not included above	1f	5,749,924			
g Noncash contributions included in lines 1a - 1f:\$	26,719				
h Total. Add lines 1a-1f		74,898,909			

Program Service Revenue

	Business Code				
2a RESEARCH BILLED REV	541700	1,879,646	726,729	1,152,917	
b					
c					
d					
e					
f All other program service revenue.					
g Total. Add lines 2a-2f		1,879,646			

Other Revenue

3 Investment income (including dividends, interest, and other similar amounts)		1,278,111			1,278,111
4 Income from investment of tax-exempt bond proceeds					
5 Royalties		3,464			3,464
6a Gross rents	(i) Real 111,078	(ii) Personal			
b Less: rental expenses	112,161				
c Rental income or (loss)	-1,083				
d Net rental income or (loss)		-1,083			-1,083
7a Gross amount from sales of assets other than inventory	(i) Securities (ii) Other 101,421				
b Less: cost or other basis and sales expenses	62,428				
c Gain or (loss)	38,993				
d Net gain or (loss)		38,993			38,993
8a Gross income from fundraising events (not including \$ 163,791 of contributions reported on line 1c). See Part IV, line 18	a 10,260				
b Less: direct expenses	b 59,275				
c Net income or (loss) from fundraising events		-49,015			-49,015
9a Gross income from gaming activities. See Part IV, line 19	a				
b Less: direct expenses	b				
c Net income or (loss) from gaming activities					
10a Gross sales of inventory, less returns and allowances	a				
b Less: cost of goods sold	b				
c Net income or (loss) from sales of inventory					
Miscellaneous Revenue	Business Code				
11a ALLOCATED ADMIN. EXP.	561000	8,040,938			8,040,938
b REIMBURSED EXPENSES	900099	102,723			102,723
c					
d All other revenue		167,342			167,342
e Total. Add lines 11a-11d		8,311,003			
12 Total revenue. See Instructions.		86,360,028	726,729	1,152,917	9,581,473

Part IX Statement of Functional Expenses

Section 501(c)(3) and 501(c)(4) organizations must complete all columns. All other organizations must complete column (A).

Check if Schedule O contains a response or note to any line in this Part IX ☐

	(A) Total expenses	(B) Program service expenses	(C) Management and general expenses	(D) Fundraising expenses
Do not include amounts reported on lines 6b, 7b, 8b, 9b, and 10b of Part VIII.				
1 Grants and other assistance to domestic organizations and domestic governments. See Part IV, line 21	1,494,431	1,494,431		
2 Grants and other assistance to domestic individuals. See Part IV, line 22	938,667	938,667		
3 Grants and other assistance to foreign organizations, foreign governments, and foreign individuals. See Part IV, line 15 and 16.				
4 Benefits paid to or for members				
5 Compensation of current officers, directors, trustees, and key employees	2,229,340	767,220	1,462,120	
6 Compensation not included above, to disqualified persons (as defined under section 4958(f)(1)) and persons described in section 4958(c)(3)(B)				
7 Other salaries and wages	34,562,207	22,300,073	11,564,759	697,375
8 Pension plan accruals and contributions (include section 401 (k) and 403(b) employer contributions)	2,894,775	1,842,351	995,005	57,419
9 Other employee benefits	3,817,031	2,444,193	1,321,476	51,362
10 Payroll taxes	2,118,041	1,333,127	718,552	66,362
11 Fees for services (non-employees):				
a Management				
b Legal	1,107,317	83,553	1,023,764	
c Accounting	72,791		72,791	
d Lobbying	96,000		96,000	
e Professional fundraising services. See Part IV, line 17				
f Investment management fees				
g Other (If line 11g amount exceeds 10% of line 25, column (A) amount, list line 11g expenses on Schedule O)	2,963,605	2,074,204	883,036	6,365
12 Advertising and promotion	853,085	384	717,261	135,440
13 Office expenses	174,360	50,800	123,486	74
14 Information technology	326,053	140,901	176,641	8,511
15 Royalties	78,255		78,255	
16 Occupancy	2,743,128	2,108,470	632,558	2,100
17 Travel	890,566	627,192	229,258	34,116
18 Payments of travel or entertainment expenses for any federal, state, or local public officials				
19 Conferences, conventions, and meetings	370,209	287,106	77,827	5,276
20 Interest	8,876,844	6,906,334	1,970,510	
21 Payments to affiliates				
22 Depreciation, depletion, and amortization	11,429,828	9,856,751	1,573,077	
23 Insurance	548,635	347,815	200,820	
24 Other expenses. Itemize expenses not covered above (List miscellaneous expenses in line 24e. If line 24e amount exceeds 10% of line 25, column (A) amount, list line 24e expenses on Schedule O.)				
a FED / STATE INCOME TAX	56,338		56,338	
b LAB SUPPLIES & SERVICES	6,389,206	6,389,206		
c MISCELLANEOUS	5,820,901	39,610	5,768,173	13,118
d EQUIPMENT & SOFTWARE	3,903,931	2,386,071	1,516,635	1,225
e All other expenses	4,886,184	3,415,543	1,467,172	3,469
25 Total functional expenses. Add lines 1 through 24e	99,641,728	65,834,002	32,725,514	1,082,212
26 Joint costs. Complete this line only if the organization reported in column (B) joint costs from a combined educational campaign and fundraising solicitation. Check here <input type="checkbox"/> if following SOP 98-2 (ASC 958-720).				

Part X Balance SheetCheck if Schedule O contains a response or note to any line in this Part IX ☐

				(A) Beginning of year		(B) End of year	
Assets	1	Cash—non-interest-bearing			1		
	2	Savings and temporary cash investments		8,076,049	2	5,389,037	
	3	Pledges and grants receivable, net		4,270,243	3	5,035,192	
	4	Accounts receivable, net		3,969,006	4	3,713,866	
	5	Loans and other receivables from current and former officers, directors, trustees, key employees, and highest compensated employees. Complete Part II of Schedule L			5		
	6	Loans and other receivables from other disqualified persons (as defined under section 4958(f)(1)), persons described in section 4958(c)(3)(B), and contributing employers and sponsoring organizations of section 501(c)(9) voluntary employees' beneficiary organizations (see instructions) Complete Part II of Schedule L			6		
	7	Notes and loans receivable, net		1,697,944	7	1,565,997	
	8	Inventories for sale or use		157,198	8	261,785	
	9	Prepaid expenses and deferred charges		1,544,611	9	1,722,950	
	10a	Land, buildings, and equipment: cost or other basis. Complete Part VI of Schedule D	10a	298,715,514			
	b	Less: accumulated depreciation	10b	119,876,692	183,460,299	10c	178,838,822
	11	Investments—publicly traded securities			11		
	12	Investments—other securities. See Part IV, line 11		7,153,585	12	6,450,853	
	13	Investments—program-related. See Part IV, line 11			13		
	14	Intangible assets			14		
	15	Other assets. See Part IV, line 11		19,640,000	15	71,320,000	
16	Total assets. Add lines 1 through 15 (must equal line 34)		229,968,935	16	274,298,502		
Liabilities	17	Accounts payable and accrued expenses		32,511,690	17	90,870,304	
	18	Grants payable			18		
	19	Deferred revenue		2,256,713	19	3,282,648	
	20	Tax-exempt bond liabilities		219,733,588	20	219,744,537	
	21	Escrow or custodial account liability. Complete Part IV of Schedule D			21		
	22	Loans and other payables to current and former officers, directors, trustees, key employees, highest compensated employees, and disqualified persons. Complete Part II of Schedule L			22		
	23	Secured mortgages and notes payable to unrelated third parties			23		
	24	Unsecured notes and loans payable to unrelated third parties			24		
	25	Other liabilities (including federal income tax, payables to related third parties, and other liabilities not included on lines 17 - 24). Complete Part X of Schedule D		45,410,534	25	91,688,848	
	26	Total liabilities. Add lines 17 through 25		299,912,525	26	405,586,337	
Net Assets or Fund Balances	Organizations that follow SFAS 117 (ASC 958), check here ► <input checked="" type="checkbox"/> and complete lines 27 through 29, and lines 33 and 34.						
	27	Unrestricted net assets		-74,444,439	27	-137,956,356	
	28	Temporarily restricted net assets		3,867,142	28	5,934,614	
	29	Permanently restricted net assets		633,707	29	733,907	
	Organizations that do not follow SFAS 117 (ASC 958), check here ► <input type="checkbox"/> and complete lines 30 through 34.						
	30	Capital stock or trust principal, or current funds			30		
	31	Paid-in or capital surplus, or land, building or equipment fund			31		
	32	Retained earnings, endowment, accumulated income, or other funds			32		
33	Total net assets or fund balances		-69,943,590	33	-131,287,835		
34	Total liabilities and net assets/fund balances		229,968,935	34	274,298,502		

Part XI Reconciliation of Net AssetsCheck if Schedule O contains a response or note to any line in this Part XI ☒

1	Total revenue (must equal Part VIII, column (A), line 12)	1	86,360,028
2	Total expenses (must equal Part IX, column (A), line 25)	2	99,641,728
3	Revenue less expenses. Subtract line 2 from line 1	3	-13,281,700
4	Net assets or fund balances at beginning of year (must equal Part X, line 33, column (A))	4	-69,943,590
5	Net unrealized gains (losses) on investments	5	54,479
6	Donated services and use of facilities	6	
7	Investment expenses	7	
8	Prior period adjustments	8	
9	Other changes in net assets or fund balances (explain in Schedule O)	9	-48,117,024
10	Net assets or fund balances at end of year. Combine lines 3 through 9 (must equal Part X, line 33, column (B))	10	-131,287,835

Part XII Financial Statements and ReportingCheck if Schedule O contains a response or note to any line in this Part XII ☐

	Yes	No
1 Accounting method used to prepare the Form 990: <input type="checkbox"/> Cash <input checked="" type="checkbox"/> Accrual <input type="checkbox"/> Other _____ If the organization changed its method of accounting from a prior year or checked "Other," explain in Schedule O.		
2a Were the organization's financial statements compiled or reviewed by an independent accountant? If "Yes," check a box below to indicate whether the financial statements for the year were compiled or reviewed on a separate basis, consolidated basis, or both: <input type="checkbox"/> Separate basis <input type="checkbox"/> Consolidated basis <input type="checkbox"/> Both consolidated and separate basis		No
b Were the organization's financial statements audited by an independent accountant? If "Yes," check a box below to indicate whether the financial statements for the year were audited on a separate basis, consolidated basis, or both: <input type="checkbox"/> Separate basis <input checked="" type="checkbox"/> Consolidated basis <input type="checkbox"/> Both consolidated and separate basis	Yes	
c If "Yes," to line 2a or 2b, does the organization have a committee that assumes responsibility for oversight of the audit, review, or compilation of its financial statements and selection of an independent accountant? If the organization changed either its oversight process or selection process during the tax year, explain in Schedule O.	Yes	
3a As a result of a federal award, was the organization required to undergo an audit or audits as set forth in the Single Audit Act and OMB Circular A-133?	Yes	
b If "Yes," did the organization undergo the required audit or audits? If the organization did not undergo the required audit or audits, explain why in Schedule O and describe any steps taken to undergo such audits.	Yes	

Additional Data

Software ID:

Software Version:

EIN: 52-2000823

Name: VAN ANDEL RESEARCH INSTITUTE

Form 990 (2018)

Form 990, Part III, Line 4a:

CENTER FOR CANCER AND CELL BIOLOGY SCHEDULE O PROVIDES FURTHER INFORMATION REGARDING THIS PROGRAM'S ACCOMPLISHMENTS.

Form 990, Part III, Line 4b:

CENTER FOR EPIGENETICS SCHEDULE O PROVIDES FURTHER INFORMATION REGARDING THIS PROGRAM'S ACCOMPLISHMENTS.

Form 990, Part III, Line 4c:

CENTER FOR NEURODEGENERATIVE SCIENCES
SEE SCHEDULE O FOR FURTHER INFORMATION ABOUT THIS PROGRAM'S ACCOMPLISHMENTS.

SCHEDULE A
(Form 990 or 990EZ)

Department of the Treasury
Internal Revenue Service

Public Charity Status and Public Support

Complete if the organization is a section 501(c)(3) organization or a section 4947(a)(1) nonexempt charitable trust.
▶ Attach to Form 990 or Form 990-EZ.
▶ Go to www.irs.gov/Form990 for the latest information.

OMB No. 1545-0047

2018

Open to Public Inspection

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I Reason for Public Charity Status (All organizations must complete this part.) See instructions.

The organization is not a private foundation because it is: (For lines 1 through 12, check only one box.)

- 1☐ A church, convention of churches, or association of churches described in **section 170(b)(1)(A)(i).**
- 2☐ A school described in **section 170(b)(1)(A)(ii).** (Attach Schedule E (Form 990 or 990-EZ).)
- 3☐ A hospital or a cooperative hospital service organization described in **section 170(b)(1)(A)(iii).**
- 4☒ A medical research organization operated in conjunction with a hospital described in **section 170(b)(1)(A)(iii).** Enter the hospital's name, city, and state: SPECTRUM HEALTH GRAND RAPIDS MI
- 5☐ An organization operated for the benefit of a college or university owned or operated by a governmental unit described in **section 170(b)(1)(A)(iv).** (Complete Part II.)
- 6☐ A federal, state, or local government or governmental unit described in **section 170(b)(1)(A)(v).**
- 7☐ An organization that normally receives a substantial part of its support from a governmental unit or from the general public described in **section 170(b)(1)(A)(vi).** (Complete Part II.)
- 8☐ A community trust described in **section 170(b)(1)(A)(vi).** (Complete Part II.)
- 9☐ An agricultural research organization described in **170(b)(1)(A)(ix)** operated in conjunction with a land-grant college or university or a non-land grant college of agriculture. See instructions. Enter the name, city, and state of the college or university:
- 10☐ An organization that normally receives: (1) more than 33 1/3% of its support from contributions, membership fees, and gross receipts from activities related to its exempt functions—subject to certain exceptions, and (2) no more than 33 1/3% of its support from gross investment income and unrelated business taxable income (less section 511 tax) from businesses acquired by the organization after June 30, 1975. See **section 509(a)(2).** (Complete Part III.)
- 11☐ An organization organized and operated exclusively to test for public safety. See **section 509(a)(4).**
- 12☐ An organization organized and operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more publicly supported organizations described in **section 509(a)(1)** or **section 509(a)(2).** See **section 509(a)(3).** Check the box in lines 12a through 12d that describes the type of supporting organization and complete lines 12e, 12f, and 12g.
- a☐ **Type I.** A supporting organization operated, supervised, or controlled by its supported organization(s), typically by giving the supported organization(s) the power to regularly appoint or elect a majority of the directors or trustees of the supporting organization. **You must complete Part IV, Sections A and B.**
- b☐ **Type II.** A supporting organization supervised or controlled in connection with its supported organization(s), by having control or management of the supporting organization vested in the same persons that control or manage the supported organization(s). **You must complete Part IV, Sections A and C.**
- c☐ **Type III functionally integrated.** A supporting organization operated in connection with, and functionally integrated with, its supported organization(s) (see instructions). **You must complete Part IV, Sections A, D, and E.**
- d☐ **Type III non-functionally integrated.** A supporting organization operated in connection with its supported organization(s) that is not functionally integrated. The organization generally must satisfy a distribution requirement and an attentiveness requirement (see instructions). **You must complete Part IV, Sections A and D, and Part V.**
- e☐ Check this box if the organization received a written determination from the IRS that it is a Type I, Type II, Type III functionally integrated, or Type III non-functionally integrated supporting organization.
- f Enter the number of supported organizations
- g Provide the following information about the supported organization(s).

(i) Name of supported organization	(ii) EIN	(iii) Type of organization (described on lines 1- 10 above (see instructions))	(iv) Is the organization listed in your governing document?		(v) Amount of monetary support (see instructions)	(vi) Amount of other support (see instructions)
			Yes	No		
Total						

Part II

Support Schedule for Organizations Described in Sections 170(b)(1)(A)(iv), 170(b)(1)(A)(vi), and 170(b)(1)(A)(ix)

(Complete only if you checked the box on line 5, 7, 8, or 9 of Part I or if the organization failed to qualify under Part III. If the organization fails to qualify under the tests listed below, please complete Part III.)

Section A. Public Support

	Calendar year (or fiscal year beginning in) ▶	(a) 2014	(b) 2015	(c) 2016	(d) 2017	(e) 2018	(f) Total
1	Gifts, grants, contributions, and membership fees received. (Do not include any "unusual grant.") . . .						
2	Tax revenues levied for the organization's benefit and either paid to or expended on its behalf. . . .						
3	The value of services or facilities furnished by a governmental unit to the organization without charge..						
4	Total. Add lines 1 through 3						
5	The portion of total contributions by each person (other than a governmental unit or publicly supported organization) included on line 1 that exceeds 2% of the amount shown on line 11, column (f). . .						
6	Public support. Subtract line 5 from line 4.						

Section B. Total Support

	Calendar year (or fiscal year beginning in) ▶	(a)2014	(b)2015	(c)2016	(d)2017	(e)2018	(f)Total
7	Amounts from line 4. . .						
8	Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources. . . .						
9	Net income from unrelated business activities, whether or not the business is regularly carried on. . .						
10	Other income. Do not include gain or loss from the sale of capital assets (Explain in Part VI.). . .						
11	Total support. Add lines 7 through 10						
12	Gross receipts from related activities, etc. (see instructions)					12	
13	First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a section 501(c)(3) organization, check this box and stop here ▶ <input type="checkbox"/>						

Section C. Computation of Public Support Percentage

14	Public support percentage for 2018 (line 6, column (f) divided by line 11, column (f))	14	
15	Public support percentage for 2017 Schedule A, Part II, line 14	15	

16a

33 1/3% support test—2018. If the organization did not check the box on line 13, and line 14 is 33 1/3% or more, check this box and **stop here.** The organization qualifies as a publicly supported organization ▶ ☐

b

33 1/3% support test—2017. If the organization did not check a box on line 13 or 16a, and line 15 is 33 1/3% or more, check this box and **stop here.** The organization qualifies as a publicly supported organization ▶ ☐

17a

10%-facts-and-circumstances test—2018. If the organization did not check a box on line 13, 16a, or 16b, and line 14 is 10% or more, and if the organization meets the "facts-and-circumstances" test, check this box and **stop here.** Explain in Part VI how the organization meets the "facts-and-circumstances" test. The organization qualifies as a publicly supported organization ▶ ☐

b

10%-facts-and-circumstances test—2017. If the organization did not check a box on line 13, 16a, 16b, or 17a, and line 15 is 10% or more, and if the organization meets the "facts-and-circumstances" test, check this box and **stop here.** Explain in Part VI how the organization meets the "facts-and-circumstances" test. The organization qualifies as a publicly supported organization ▶ ☐

18

Private foundation. If the organization did not check a box on line 13, 16a, 16b, 17a, or 17b, check this box and see instructions ▶ ☐

Schedule A (Form 990 or 990-EZ) 2018

Part III Support Schedule for Organizations Described in Section 509(a)(2)

(Complete only if you checked the box on line 10 of Part I or if the organization failed to qualify under Part II. If the organization fails to qualify under the tests listed below, please complete Part II.)

Section A. Public Support

Calendar year (or fiscal year beginning in) ►	(a) 2014	(b) 2015	(c) 2016	(d) 2017	(e) 2018	(f) Total
1 Gifts, grants, contributions, and membership fees received. (Do not include any "unusual grants.") .						
2 Gross receipts from admissions, merchandise sold or services performed, or facilities furnished in any activity that is related to the organization's tax-exempt purpose						
3 Gross receipts from activities that are not an unrelated trade or business under section 513 . . .						
4 Tax revenues levied for the organization's benefit and either paid to or expended on its behalf. . .						
5 The value of services or facilities furnished by a governmental unit to the organization without charge						
6 Total. Add lines 1 through 5						
7a Amounts included on lines 1, 2, and 3 received from disqualified persons						
b Amounts included on lines 2 and 3 received from other than disqualified persons that exceed the greater of \$5,000 or 1% of the amount on line 13 for the year.						
c Add lines 7a and 7b. .						
8 Public support. (Subtract line 7c from line 6.)						

Section B. Total Support

Calendar year (or fiscal year beginning in) ►	(a) 2014	(b) 2015	(c) 2016	(d) 2017	(e) 2018	(f) Total
9 Amounts from line 6. . .						
10a Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources. .						
b Unrelated business taxable income (less section 511 taxes) from businesses acquired after June 30, 1975.						
c Add lines 10a and 10b.						
11 Net income from unrelated business activities not included in line 10b, whether or not the business is regularly carried on.						
12 Other income. Do not include gain or loss from the sale of capital assets (Explain in Part VI.) . .						
13 Total support. (Add lines 9, 10c, 11, and 12.) . .						

14 First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a section 501(c)(3) organization, check this box and **stop here.** ☐

Section C. Computation of Public Support Percentage

15 Public support percentage for 2018 (line 8, column (f) divided by line 13, column (f))	15	
16 Public support percentage from 2017 Schedule A, Part III, line 15	16	

Section D. Computation of Investment Income Percentage

17 Investment income percentage for 2018 (line 10c, column (f) divided by line 13, column (f))	17	
18 Investment income percentage from 2017 Schedule A, Part III, line 17	18	

19a 33 1/3% support tests—2018. If the organization did not check the box on line 14, and line 15 is more than 33 1/3%, and line 17 is not more than 33 1/3%, check this box and **stop here.** The organization qualifies as a publicly supported organization ☐

b 33 1/3% support tests—2017. If the organization did not check a box on line 14 or line 19a, and line 16 is more than 33 1/3% and line 18 is not more than 33 1/3%, check this box and **stop here.** The organization qualifies as a publicly supported organization ☐

20 Private foundation. If the organization did not check a box on line 14, 19a, or 19b, check this box and see instructions ☐

Part IV Supporting Organizations

(Complete only if you checked a box on line 12 of Part I. If you checked 12a of Part I, complete Sections A and B. If you checked 12b of Part I, complete Sections A and C. If you checked 12c of Part I, complete Sections A, D, and E. If you checked 12d of Part I, complete Sections A and D, and complete Part V.)

Section A. All Supporting Organizations

	Yes	No
1 Are all of the organization's supported organizations listed by name in the organization's governing documents? <i>If "No," describe in Part VI how the supported organizations are designated. If designated by class or purpose, describe the designation. If historic and continuing relationship, explain.</i>		
1		
2 Did the organization have any supported organization that does not have an IRS determination of status under section 509(a)(1) or (2)? <i>If "Yes," explain in Part VI how the organization determined that the supported organization was described in section 509(a)(1) or (2).</i>		
2		
3a Did the organization have a supported organization described in section 501(c)(4), (5), or (6)? <i>If "Yes," answer (b) and (c) below.</i>		
3a		
b Did the organization confirm that each supported organization qualified under section 501(c)(4), (5), or (6) and satisfied the public support tests under section 509(a)(2)? <i>If "Yes," describe in Part VI when and how the organization made the determination.</i>		
3b		
c Did the organization ensure that all support to such organizations was used exclusively for section 170(c)(2)(B) purposes? <i>If "Yes," explain in Part VI what controls the organization put in place to ensure such use.</i>		
3c		
4a Was any supported organization not organized in the United States ("foreign supported organization")? <i>If "Yes" and if you checked 12a or 12b in Part I, answer (b) and (c) below.</i>		
4a		
b Did the organization have ultimate control and discretion in deciding whether to make grants to the foreign supported organization? <i>If "Yes," describe in Part VI how the organization had such control and discretion despite being controlled or supervised by or in connection with its supported organizations.</i>		
4b		
c Did the organization support any foreign supported organization that does not have an IRS determination under sections 501(c)(3) and 509(a)(1) or (2)? <i>If "Yes," explain in Part VI what controls the organization used to ensure that all support to the foreign supported organization was used exclusively for section 170(c)(2)(B) purposes.</i>		
4c		
5a Did the organization add, substitute, or remove any supported organizations during the tax year? <i>If "Yes," answer (b) and (c) below (if applicable). Also, provide detail in Part VI, including (i) the names and EIN numbers of the supported organizations added, substituted, or removed; (ii) the reasons for each such action; (iii) the authority under the organization's organizing document authorizing such action; and (iv) how the action was accomplished (such as by amendment to the organizing document).</i>		
5a		
b Type I or Type II only. Was any added or substituted supported organization part of a class already designated in the organization's organizing document?		
5b		
c Substitutions only. Was the substitution the result of an event beyond the organization's control?		
5c		
6 Did the organization provide support (whether in the form of grants or the provision of services or facilities) to anyone other than (i) its supported organizations, (ii) individuals that are part of the charitable class benefited by one or more of its supported organizations, or (iii) other supporting organizations that also support or benefit one or more of the filing organization's supported organizations? <i>If "Yes," provide detail in Part VI.</i>		
6		
7 Did the organization provide a grant, loan, compensation, or other similar payment to a substantial contributor (defined in section 4958(c)(3)(C)), a family member of a substantial contributor, or a 35% controlled entity with regard to a substantial contributor? <i>If "Yes," complete Part I of Schedule L (Form 990 or 990-EZ) .</i>		
7		
8 Did the organization make a loan to a disqualified person (as defined in section 4958) not described in line 7? <i>If "Yes," complete Part I of Schedule L (Form 990 or 990-EZ).</i>		
8		
9a Was the organization controlled directly or indirectly at any time during the tax year by one or more disqualified persons as defined in section 4946 (other than foundation managers and organizations described in section 509(a)(1) or (2))? <i>If "Yes," provide detail in Part VI.</i>		
9a		
b Did one or more disqualified persons (as defined in line 9a) hold a controlling interest in any entity in which the supporting organization had an interest? <i>If "Yes," provide detail in Part VI.</i>		
9b		
c Did a disqualified person (as defined in line 9a) have an ownership interest in, or derive any personal benefit from, assets in which the supporting organization also had an interest? <i>If "Yes," provide detail in Part VI.</i>		
9c		
10a Was the organization subject to the excess business holdings rules of section 4943 because of section 4943(f) (regarding certain Type II supporting organizations, and all Type III non-functionally integrated supporting organizations)? <i>If "Yes," answer line 10b below.</i>		
10a		
b Did the organization have any excess business holdings in the tax year? <i>(Use Schedule C, Form 4720, to determine whether the organization had excess business holdings).</i>		
10b		

Part IV

Supporting Organizations (continued)

	Yes	No
11 Has the organization accepted a gift or contribution from any of the following persons?		
a A person who directly or indirectly controls, either alone or together with persons described in (b) and (c) below, the governing body of a supported organization?		
b A family member of a person described in (a) above?		
c A 35% controlled entity of a person described in (a) or (b) above? If "Yes" to a, b, or c, provide detail in Part VI.		

Section B. Type I Supporting Organizations

	Yes	No
1 Did the directors, trustees, or membership of one or more supported organizations have the power to regularly appoint or elect at least a majority of the organization's directors or trustees at all times during the tax year? If "No," describe in Part VI how the supported organization(s) effectively operated, supervised, or controlled the organization's activities. If the organization had more than one supported organization, describe how the powers to appoint and/or remove directors or trustees were allocated among the supported organizations and what conditions or restrictions, if any, applied to such powers during the tax year.		
1		
2 Did the organization operate for the benefit of any supported organization other than the supported organization(s) that operated, supervised, or controlled the supporting organization? If "Yes," explain in Part VI how providing such benefit carried out the purposes of the supported organization(s) that operated, supervised or controlled the supporting organization.		
2		

Section C. Type II Supporting Organizations

	Yes	No
1 Were a majority of the organization's directors or trustees during the tax year also a majority of the directors or trustees of each of the organization's supported organization(s)? If "No," describe in Part VI how control or management of the supporting organization was vested in the same persons that controlled or managed the supported organization(s).		
1		

Section D. All Type III Supporting Organizations

	Yes	No
1 Did the organization provide to each of its supported organizations, by the last day of the fifth month of the organization's tax year, (i) a written notice describing the type and amount of support provided during the prior tax year, (ii) a copy of the Form 990 that was most recently filed as of the date of notification, and (iii) copies of the organization's governing documents in effect on the date of notification, to the extent not previously provided?		
1		
2 Were any of the organization's officers, directors, or trustees either (i) appointed or elected by the supported organization (s) or (ii) serving on the governing body of a supported organization? If "No," explain in Part VI how the organization maintained a close and continuous working relationship with the supported organization(s).		
2		
3 By reason of the relationship described in (2), did the organization's supported organizations have a significant voice in the organization's investment policies and in directing the use of the organization's income or assets at all times during the tax year? If "Yes," describe in Part VI the role the organization's supported organizations played in this regard.		
3		

Section E. Type III Functionally-Integrated Supporting Organizations

1 Check the box next to the method that the organization used to satisfy the Integral Part Test during the year (see instructions):		
a <input type="checkbox"/> The organization satisfied the Activities Test. Complete line 2 below.		
b <input type="checkbox"/> The organization is the parent of each of its supported organizations. Complete line 3 below.		
c <input type="checkbox"/> The organization supported a governmental entity. Describe in Part VI how you supported a government entity (see instructions)		
2 Activities Test. Answer (a) and (b) below.	Yes	No
a Did substantially all of the organization's activities during the tax year directly further the exempt purposes of the supported organization(s) to which the organization was responsive? If "Yes," then in Part VI identify those supported organizations and explain how these activities directly furthered their exempt purposes, how the organization was responsive to those supported organizations, and how the organization determined that these activities constituted substantially all of its activities.		
2a		
b Did the activities described in (a) constitute activities that, but for the organization's involvement, one or more of the organization's supported organization(s) would have been engaged in? If "Yes," explain in Part VI the reasons for the organization's position that its supported organization(s) would have engaged in these activities but for the organization's involvement.		
2b		
3 Parent of Supported Organizations. Answer (a) and (b) below.		
a Did the organization have the power to regularly appoint or elect a majority of the officers, directors, or trustees of each of the supported organizations? Provide details in Part VI.		
3a		
b Did the organization exercise a substantial degree of direction over the policies, programs and activities of each of its supported organizations? If "Yes," describe in Part VI the role played by the organization in this regard.		
3b		

Part V Type III Non-Functionally Integrated 509(a)(3) Supporting Organizations			
<div><div>1</div><div><input type="checkbox"/></div><div>Check here if the organization satisfied the Integral Part Test as a qualifying trust on Nov. 20, 1970 (explain in Part VI). See instructions. All other Type III non-functionally integrated supporting organizations must complete Sections A through E.</div></div>			
Section A - Adjusted Net Income		(A) Prior Year	(B) Current Year (optional)
1	Net short-term capital gain	1	
2	Recoveries of prior-year distributions	2	
3	Other gross income (see instructions)	3	
4	Add lines 1 through 3	4	
5	Depreciation and depletion	5	
6	Portion of operating expenses paid or incurred for production or collection of gross income or for management, conservation, or maintenance of property held for production of income (see instructions)	6	
7	Other expenses (see instructions)	7	
8	Adjusted Net Income (subtract lines 5, 6 and 7 from line 4)	8	
Section B - Minimum Asset Amount		(A) Prior Year	(B) Current Year (optional)
1	Aggregate fair market value of all non-exempt-use assets (see instructions for short tax year or assets held for part of year):	1	
a	Average monthly value of securities	1a	
b	Average monthly cash balances	1b	
c	Fair market value of other non-exempt-use assets	1c	
d	Total (add lines 1a, 1b, and 1c)	1d	
e	Discount claimed for blockage or other factors (explain in detail in Part VI):		
2	Acquisition indebtedness applicable to non-exempt use assets	2	
3	Subtract line 2 from line 1d	3	
4	Cash deemed held for exempt use. Enter 1-1/2% of line 3 (for greater amount, see instructions).	4	
5	Net value of non-exempt-use assets (subtract line 4 from line 3)	5	
6	Multiply line 5 by .035	6	
7	Recoveries of prior-year distributions	7	
8	Minimum Asset Amount (add line 7 to line 6)	8	
Section C - Distributable Amount			Current Year
1	Adjusted net income for prior year (from Section A, line 8, Column A)	1	
2	Enter 85% of line 1	2	
3	Minimum asset amount for prior year (from Section B, line 8, Column A)	3	
4	Enter greater of line 2 or line 3	4	
5	Income tax imposed in prior year	5	
6	Distributable Amount. Subtract line 5 from line 4, unless subject to emergency temporary reduction (see instructions)	6	
7	<div><div><input type="checkbox"/></div><div>Check here if the current year is the organization's first as a non-functionally-integrated Type III supporting organization (see instructions)</div></div>		

Part V

Type III Non-Functionally Integrated 509(a)(3) Supporting Organizations (continued)

Section D - Distributions	Current Year
1 Amounts paid to supported organizations to accomplish exempt purposes	
2 Amounts paid to perform activity that directly furthers exempt purposes of supported organizations, in excess of income from activity	
3 Administrative expenses paid to accomplish exempt purposes of supported organizations	
4 Amounts paid to acquire exempt-use assets	
5 Qualified set-aside amounts (prior IRS approval required)	
6 Other distributions (describe in Part VI). See instructions	
7 Total annual distributions. Add lines 1 through 6.	
8 Distributions to attentive supported organizations to which the organization is responsive (provide details in Part VI). See instructions	
9 Distributable amount for 2018 from Section C, line 6	
10 Line 8 amount divided by Line 9 amount	

Section E - Distribution Allocations (see instructions)	(i) Excess Distributions	(ii) Underdistributions Pre-2018	(iii) Distributable Amount for 2018
1 Distributable amount for 2018 from Section C, line 6			
2 Underdistributions, if any, for years prior to 2018 (reasonable cause required-- explain in Part VI). See instructions.			
3 Excess distributions carryover, if any, to 2018:			
a From 2013.			
b From 2014.			
c From 2015.			
d From 2016.			
e From 2017.			
f Total of lines 3a through e			
g Applied to underdistributions of prior years			
h Applied to 2018 distributable amount			
i Carryover from 2013 not applied (see instructions)			
j Remainder. Subtract lines 3g, 3h, and 3i from 3f.			
4 Distributions for 2018 from Section D, line 7:			
\$			
a Applied to underdistributions of prior years			
b Applied to 2018 distributable amount			
c Remainder. Subtract lines 4a and 4b from 4.			
5 Remaining underdistributions for years prior to 2018, if any. Subtract lines 3g and 4a from line 2. If the amount is greater than zero, explain in Part VI. See instructions.			
6 Remaining underdistributions for 2018. Subtract lines 3h and 4b from line 1. If the amount is greater than zero, explain in Part VI. See instructions.			
7 Excess distributions carryover to 2019. Add lines 3j and 4c.			
8 Breakdown of line 7:			
a Excess from 2014.			
b Excess from 2015.			
c Excess from 2016.			
d Excess from 2017.			
e Excess from 2018.			

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Part VI **Supplemental Information.** Provide the explanations required by Part II, line 10; Part II, line 17a or 17b; Part III, line 12; Part IV, Section A, lines 1, 2, 3b, 3c, 4b, 4c, 5a, 6, 9a, 9b, 9c, 11a, 11b, and 11c; Part IV, Section B, lines 1 and 2; Part IV, Section C, line 1; Part IV, Section D, lines 2 and 3; Part IV, Section E, lines 1c, 2a, 2b, 3a and 3b; Part V, line 1; Part V, Section B, line 1e; Part V Section D, lines 5, 6, and 8; and Part V, Section E, lines 2, 5, and 6. Also complete this part for any additional information. (See instructions).

Facts And Circumstances Test

SCHEDULE C

(Form 990 or 990-EZ)

Department of the Treasury

Internal Revenue Service

Political Campaign and Lobbying Activities

For Organizations Exempt From Income Tax Under section 501(c) and section 527

▶Complete if the organization is described below. ▶Attach to Form 990 or Form 990-EZ.
▶Go to www.irs.gov/Form990 for instructions and the latest information.

OMB No. 1545-0047

2018

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If the organization answered "Yes" on Form 990, Part IV, Line 3, or Form 990-EZ, Part V, line 46 (Political Campaign Activities), then

- Section 501(c)(3) organizations: Complete Parts I-A and B. Do not complete Part I-C.
- Section 501(c) (other than section 501(c)(3)) organizations: Complete Parts I-A and C below. Do not complete Part I-B.
- Section 527 organizations: Complete Part I-A only.

If the organization answered "Yes" on Form 990, Part IV, Line 4, or Form 990-EZ, Part VI, line 47 (Lobbying Activities), then

- Section 501(c)(3) organizations that have filed Form 5768 (election under section 501(h)): Complete Part II-A. Do not complete Part II-B.
- Section 501(c)(3) organizations that have NOT filed Form 5768 (election under section 501(h)): Complete Part II-B. Do not complete Part II-A.

If the organization answered "Yes" on Form 990, Part IV, Line 5 (Proxy Tax) (see separate instructions) or Form 990-EZ, Part V, line 35c (Proxy Tax) (see separate instructions), then

- Section 501(c)(4), (5), or (6) organizations: Complete Part III.

Name of the organization VAN ANDEL RESEARCH INSTITUTE	Employer identification number 52-2000823
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Part I-A Complete if the organization is exempt under section 501(c) or is a section 527 organization.

- 1 Provide a description of the organization's direct and indirect political campaign activities in Part IV (see instructions for definition of "political campaign activities")
- 2 Political campaign activity expenditures (see instructions) ▶ \$
- 3 Volunteer hours for political campaign activities (see instructions) ▶

Part I-B Complete if the organization is exempt under section 501(c)(3).

- 1 Enter the amount of any excise tax incurred by the organization under section 4955 ▶ \$
- 2 Enter the amount of any excise tax incurred by organization managers under section 4955 ▶ \$
- 3 If the organization incurred a section 4955 tax, did it file Form 4720 for this year? ☐ Yes ☐ No
- 4a Was a correction made? ☐ Yes ☐ No
- b If "Yes," describe in Part IV.

Part I-C Complete if the organization is exempt under section 501(c), except section 501(c)(3).

- 1 Enter the amount directly expended by the filing organization for section 527 exempt function activities ▶ \$
- 2 Enter the amount of the filing organization's funds contributed to other organizations for section 527 exempt function activities ▶ \$
- 3 Total exempt function expenditures. Add lines 1 and 2. Enter here and on Form 1120-POL, line 17b..... ▶ \$
- 4 Did the filing organization file Form 1120-POL for this year? ☐ Yes ☐ No
- 5 Enter the names, addresses and employer identification number (EIN) of all section 527 political organizations to which the filing organization made payments. For each organization listed, enter the amount paid from the filing organization's funds. Also enter the amount of political contributions received that were promptly and directly delivered to a separate political organization, such as a separate segregated fund or a political action committee (PAC). If additional space is needed, provide information in Part IV.

(a) Name	(b) Address	(c) EIN	(d) Amount paid from filing organization's funds. If none, enter -0-.	(e) Amount of political contributions received and promptly and directly delivered to a separate political organization. If none, enter -0-.
1				
2				
3				
4				
5				
6				

Part II-A Complete if the organization is exempt under section 501(c)(3) and filed Form 5768 (election under section 501(h)).

A Check ☐ if the filing organization belongs to an affiliated group (and list in Part IV each affiliated group member's name, address, EIN, expenses, and share of excess lobbying expenditures).

B Check ☐ if the filing organization checked box A and "limited control" provisions apply.

Limits on Lobbying Expenditures (The term "expenditures" means amounts paid or incurred.)		(a) Filing organization's totals	(b) Affiliated group totals												
1a Total lobbying expenditures to influence public opinion (grass roots lobbying)															
b Total lobbying expenditures to influence a legislative body (direct lobbying)		96,000													
c Total lobbying expenditures (add lines 1a and 1b)		96,000													
d Other exempt purpose expenditures		99,545,729													
e Total exempt purpose expenditures (add lines 1c and 1d)		99,641,729													
f Lobbying nontaxable amount. Enter the amount from the following table in both columns.		1,000,000													
<table border="1"> <thead> <tr> <th>If the amount on line 1e, column (a) or (b) is:</th> <th>The lobbying nontaxable amount is:</th> </tr> </thead> <tbody> <tr> <td>Not over \$500,000</td> <td>20% of the amount on line 1e.</td> </tr> <tr> <td>Over \$500,000 but not over \$1,000,000</td> <td>\$100,000 plus 15% of the excess over \$500,000.</td> </tr> <tr> <td>Over \$1,000,000 but not over \$1,500,000</td> <td>\$175,000 plus 10% of the excess over \$1,000,000.</td> </tr> <tr> <td>Over \$1,500,000 but not over \$17,000,000</td> <td>\$225,000 plus 5% of the excess over \$1,500,000.</td> </tr> <tr> <td>Over \$17,000,000</td> <td>\$1,000,000.</td> </tr> </tbody> </table>		If the amount on line 1e, column (a) or (b) is:	The lobbying nontaxable amount is:	Not over \$500,000	20% of the amount on line 1e.	Over \$500,000 but not over \$1,000,000	\$100,000 plus 15% of the excess over \$500,000.	Over \$1,000,000 but not over \$1,500,000	\$175,000 plus 10% of the excess over \$1,000,000.	Over \$1,500,000 but not over \$17,000,000	\$225,000 plus 5% of the excess over \$1,500,000.	Over \$17,000,000	\$1,000,000.		
If the amount on line 1e, column (a) or (b) is:	The lobbying nontaxable amount is:														
Not over \$500,000	20% of the amount on line 1e.														
Over \$500,000 but not over \$1,000,000	\$100,000 plus 15% of the excess over \$500,000.														
Over \$1,000,000 but not over \$1,500,000	\$175,000 plus 10% of the excess over \$1,000,000.														
Over \$1,500,000 but not over \$17,000,000	\$225,000 plus 5% of the excess over \$1,500,000.														
Over \$17,000,000	\$1,000,000.														
g Grassroots nontaxable amount (enter 25% of line 1f)		250,000													
h Subtract line 1g from line 1a. If zero or less, enter -0-		0													
i Subtract line 1f from line 1c. If zero or less, enter -0-		0													
j If there is an amount other than zero on either line 1h or line 1i, did the organization file Form 4720 reporting section 4911 tax for this year?		<input type="checkbox"/> Yes <input type="checkbox"/> No													

4-Year Averaging Period Under section 501(h)
(Some organizations that made a section 501(h) election do not have to complete all of the five columns below. See the separate instructions for lines 2a through 2f.)

Lobbying Expenditures During 4-Year Averaging Period					
Calendar year (or fiscal year beginning in)	(a) 2015	(b) 2016	(c) 2017	(d) 2018	(e) Total
2a Lobbying nontaxable amount	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
b Lobbying ceiling amount (150% of line 2a, column(e))					6,000,000
c Total lobbying expenditures	238,376	96,000	96,000	96,000	526,376
d Grassroots nontaxable amount	250,000	250,000	250,000	250,000	1,000,000
e Grassroots ceiling amount (150% of line 2d, column (e))					1,500,000
f Grassroots lobbying expenditures					

Part II-B Complete if the organization is exempt under section 501(c)(3) and has NOT filed Form 5768 (election under section 501(h)).

For each "Yes" response on lines 1a through 1i below, provide in Part IV a detailed description of the lobbying activity.

		(a)		(b)
		Yes	No	Amount
1	During the year, did the filing organization attempt to influence foreign, national, state or local legislation, including any attempt to influence public opinion on a legislative matter or referendum, through the use of:			
a	Volunteers?			
b	Paid staff or management (include compensation in expenses reported on lines 1c through 1i)?			
c	Media advertisements?			
d	Mailings to members, legislators, or the public?			
e	Publications, or published or broadcast statements?			
f	Grants to other organizations for lobbying purposes?			
g	Direct contact with legislators, their staffs, government officials, or a legislative body?			
h	Rallies, demonstrations, seminars, conventions, speeches, lectures, or any similar means?			
i	Other activities?			
j	Total. Add lines 1c through 1i			
2a	Did the activities in line 1 cause the organization to be not described in section 501(c)(3)?			
b	If "Yes," enter the amount of any tax incurred under section 4912			
c	If "Yes," enter the amount of any tax incurred by organization managers under section 4912			
d	If the filing organization incurred a section 4912 tax, did it file Form 4720 for this year?			

Part III-A Complete if the organization is exempt under section 501(c)(4), section 501(c)(5), or section 501(c)(6).

	Yes	No
1 Were substantially all (90% or more) dues received nondeductible by members?	1	
2 Did the organization make only in-house lobbying expenditures of \$2,000 or less?	2	
3 Did the organization agree to carry over lobbying and political expenditures from the prior year?	3	

Part III-B Complete if the organization is exempt under section 501(c)(4), section 501(c)(5), or section 501(c)(6) and if either (a) BOTH Part III-A, lines 1 and 2, are answered "No" OR (b) Part III-A, line 3, is answered "Yes."

1	Dues, assessments and similar amounts from members	1	
2	Section 162(e) nondeductible lobbying and political expenditures (do not include amounts of political expenses for which the section 527(f) tax was paid).		
a	Current year	2a	
b	Carryover from last year	2b	
c	Total	2c	
3	Aggregate amount reported in section 6033(e)(1)(A) notices of nondeductible section 162(e) dues .	3	
4	If notices were sent and the amount on line 2c exceeds the amount on line 3, what portion of the excess does the organization agree to carryover to the reasonable estimate of nondeductible lobbying and political expenditure next year?	4	
5	Taxable amount of lobbying and political expenditures (see instructions)	5	

Part IV Supplemental Information

Provide the descriptions required for Part I-A, line 1; Part I-B, line 4; Part I-C, line 5; Part II-A (affiliated group list); Part II-A, lines 1 and 2 (see instructions), and Part II-B, line 1. Also, complete this part for any additional information.

Return Reference	Explanation
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SCHEDULE D
(Form 990)

Department of the Treasury
Internal Revenue Service

Supplemental Financial Statements

► Complete if the organization answered "Yes," on Form 990, Part IV, line 6, 7, 8, 9, 10, 11a, 11b, 11c, 11d, 11e, 11f, 12a, or 12b.
► Attach to Form 990.
► Go to www.irs.gov/Form990 for the latest information.

OMB No. 1545-0047

2018

Open to Public Inspection

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I

Organizations Maintaining Donor Advised Funds or Other Similar Funds or Accounts.

Complete if the organization answered "Yes" on Form 990, Part IV, line 6.

	(a) Donor advised funds	(b) Funds and other accounts
1 Total number at end of year		
2 Aggregate value of contributions to (during year)		
3 Aggregate value of grants from (during year)		
4 Aggregate value at end of year		

5 Did the organization inform all donors and donor advisors in writing that the assets held in donor advised funds are the organization's property, subject to the organization's exclusive legal control?

☐ Yes ☐ No

6 Did the organization inform all grantees, donors, and donor advisors in writing that grant funds can be used only for charitable purposes and not for the benefit of the donor or donor advisor, or for any other purpose conferring impermissible private benefit?

☐ Yes ☐ No

Part II

Conservation Easements.

Complete if the organization answered "Yes" on Form 990, Part IV, line 7.

1 Purpose(s) of conservation easements held by the organization (check all that apply).

☐ Preservation of land for public use (e.g., recreation or education)

☐ Preservation of an historically important land area

☐ Protection of natural habitat

☐ Preservation of a certified historic structure

☐ Preservation of open space

2 Complete lines 2a through 2d if the organization held a qualified conservation contribution in the form of a conservation easement on the last day of the tax year.

	Held at the End of the Year
a Total number of conservation easements	2a
b Total acreage restricted by conservation easements	2b
c Number of conservation easements on a certified historic structure included in (a)	2c
d Number of conservation easements included in (c) acquired after 7/25/06, and not on a historic structure listed in the National Register	2d

3 Number of conservation easements modified, transferred, released, extinguished, or terminated by the organization during the tax year ►

4 Number of states where property subject to conservation easement is located ►

5 Does the organization have a written policy regarding the periodic monitoring, inspection, handling of violations, and enforcement of the conservation easements it holds?

☐ Yes ☐ No

6 Staff and volunteer hours devoted to monitoring, inspecting, handling of violations, and enforcing conservation easements during the year ►

7 Amount of expenses incurred in monitoring, inspecting, handling of violations, and enforcing conservation easements during the year ► \$

8 Does each conservation easement reported on line 2(d) above satisfy the requirements of section 170(h)(4)(B)(i) and section 170(h)(4)(B)(ii)?

☐ Yes ☐ No

9 In Part XIII, describe how the organization reports conservation easements in its revenue and expense statement, and balance sheet, and include, if applicable, the text of the footnote to the organization's financial statements that describes the organization's accounting for conservation easements.

Part III

Organizations Maintaining Collections of Art, Historical Treasures, or Other Similar Assets.

Complete if the organization answered "Yes" on Form 990, Part IV, line 8.

1a If the organization elected, as permitted under SFAS 116 (ASC 958), not to report in its revenue statement and balance sheet works of art, historical treasures, or other similar assets held for public exhibition, education, or research in furtherance of public service, provide, in Part XIII, the text of the footnote to its financial statements that describes these items.

b If the organization elected, as permitted under SFAS 116 (ASC 958), to report in its revenue statement and balance sheet works of art, historical treasures, or other similar assets held for public exhibition, education, or research in furtherance of public service, provide the following amounts relating to these items:

(i) Revenue included on Form 990, Part VIII, line 1 ► \$

(ii) Assets included in Form 990, Part X ► \$

2 If the organization received or held works of art, historical treasures, or other similar assets for financial gain, provide the following amounts required to be reported under SFAS 116 (ASC 958) relating to these items:

a Revenue included on Form 990, Part VIII, line 1 ► \$

b Assets included in Form 990, Part X ► \$

For Paperwork Reduction Act Notice, see the Instructions for Form 990.

Cat. No. 52283D

Schedule D (Form 990) 2018

Part III

Organizations Maintaining Collections of Art, Historical Treasures, or Other Similar Assets (continued)

3

Using the organization's acquisition, accession, and other records, check any of the following that are a significant use of its collection items (check all that apply):

a

☐

Public exhibition

b

☐

Scholarly research

c

☐

Preservation for future generations

d

☐

Loan or exchange programs

e

☐

Other

4

Provide a description of the organization's collections and explain how they further the organization's exempt purpose in Part XIII.

5

During the year, did the organization solicit or receive donations of art, historical treasures or other similar assets to be sold to raise funds rather than to be maintained as part of the organization's collection? . . .

☐

Yes

☐

No

Part IV

Escrow and Custodial Arrangements.

Complete if the organization answered "Yes" on Form 990, Part IV, line 9, or reported an amount on Form 990, Part X, line 21.

1a

Is the organization an agent, trustee, custodian or other intermediary for contributions or other assets not included on Form 990, Part X?

☐

Yes

☐

No

b

If "Yes," explain the arrangement in Part XIII and complete the following table:

c

Beginning balance

d

Additions during the year

e

Distributions during the year

f

Ending balance

	Amount
1c	
1d	
1e	
1f	

2a

Did the organization include an amount on Form 990, Part X, line 21, for escrow or custodial account liability? . . .

☐

Yes

☐

No

b

If "Yes," explain the arrangement in Part XIII. Check here if the explanation has been provided in Part XIII

☐

Part V

Endowment Funds. Complete if the organization answered "Yes" on Form 990, Part IV, line 10.

	(a)Current year	(b)Prior year	(c)Two years back	(d)Three years back	(e)Four years back
1a	Beginning of year balance	626,264	666,302	612,777	
b	Contributions	45,000	10,100	596,343	
c	Net investment earnings, gains, and losses	54,479	12,604	61,326	18,408
d	Grants or scholarships				
e	Other expenditures for facilities and programs	1,984	62,742	7,801	1,974
f	Administrative expenses				
g	End of year balance	723,759	626,264	666,302	612,777

2

Provide the estimated percentage of the current year end balance (line 1g, column (a)) held as:

a

Board designated or quasi-endowment ▶

b

Permanent endowment ▶ 100.000 %

c

Temporarily restricted endowment ▶

The percentages on lines 2a, 2b, and 2c should equal 100%.

3a

Are there endowment funds not in the possession of the organization that are held and administered for the organization by:

(i)

unrelated organizations

(ii)

related organizations

b

If "Yes" on 3a(ii), are the related organizations listed as required on Schedule R?

	Yes	No
3a(i)		No
3a(ii)	Yes	
3b	Yes	

4

Describe in Part XIII the intended uses of the organization's endowment funds.

Part VI

Land, Buildings, and Equipment.

Complete if the organization answered "Yes" on Form 990, Part IV, line 11a. See Form 990, Part X, line 10.

Description of property	(a) Cost or other basis (investment)	(b) Cost or other basis (other)	(c) Accumulated depreciation	(d) Book value
1a	Land	5,288,315		5,288,315
b	Buildings	229,902,348	72,976,644	156,925,704
c	Leasehold improvements			
d	Equipment	62,216,522	46,763,464	15,453,058
e	Other	1,308,329	136,584	1,171,745
Total.	Add lines 1a through 1e.(Column (d) must equal Form 990, Part X, column (B), line 10(c).) . . . ▶			178,838,822

Schedule D (Form 990) 2018

Part VII

Investments—Other Securities. Complete if the organization answered "Yes" on Form 990, Part IV, line 11b.
See Form 990, Part X, line 12.

(a) Description of security or category (including name of security)	(b) Book value	(c) Method of valuation: Cost or end-of-year market value
(1) Financial derivatives		
(2) Closely-held equity interests		
(3) Other _____		
(A)		
(B)		
(C)		
(D)		
(E)		
(F)		
(G)		
(H)		
Total. (Column (b) must equal Form 990, Part X, col. (B) line 12.) ▶		

Part VIII

Investments—Program Related.
Complete if the organization answered 'Yes' on Form 990, Part IV, line 11c. See Form 990, Part X, line 13.

(a) Description of investment	(b) Book value	(c) Method of valuation: Cost or end-of-year market value
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
Total. (Column (b) must equal Form 990, Part X, col.(B) line 13.) ▶		

Part IX

Other Assets. Complete if the organization answered 'Yes' on Form 990, Part IV, line 11d. See Form 990, Part X, line 15.

(a) Description	(b) Book value
(1) PLEDGED SECURITIES	71,320,000
(2)	
(3)	
(4)	
(5)	
(6)	
(7)	
(8)	
(9)	
Total. (Column (b) must equal Form 990, Part X, col.(B) line 15.) ▶	71,320,000

Part X

Other Liabilities. Complete if the organization answered 'Yes' on Form 990, Part IV, line 11e or 11f.
See Form 990, Part X, line 25.

1. (a) Description of liability	(b) Book value	
(1) Federal income taxes		
UNREALIZED LOSS ON INTEREST RATE SWAP	89,390,461	
RELATED-PARTY PAYABLE	2,298,387	
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
Total. (Column (b) must equal Form 990, Part X, col.(B) line 25.) ▶	91,688,848	

2. Liability for uncertain tax positions. In Part XIII, provide the text of the footnote to the organization's financial statements that reports the organization's liability for uncertain tax positions under FIN 48 (ASC 740). Check here if the text of the footnote has been provided in Part XIII

☒

Part XI Reconciliation of Revenue per Audited Financial Statements With Revenue per Return

Complete if the organization answered 'Yes' on Form 990, Part IV, line 12a.

1	Total revenue, gains, and other support per audited financial statements	1	77,666,522
2	Amounts included on line 1 but not on Form 990, Part VIII, line 12:		
a	Net unrealized gains (losses) on investments	2a	54,479
b	Donated services and use of facilities	2b	
c	Recoveries of prior year grants	2c	
d	Other (Describe in Part XIII.)	2d	-707,047
e	Add lines 2a through 2d	2e	-652,568
3	Subtract line 2e from line 1	3	78,319,090
4	Amounts included on Form 990, Part VIII, line 12, but not on line 1 :		
a	Investment expenses not included on Form 990, Part VIII, line 7b	4a	
b	Other (Describe in Part XIII.)	4b	8,040,938
c	Add lines 4a and 4b	4c	8,040,938
5	Total revenue. Add lines 3 and 4c . (This must equal Form 990, Part I, line 12.)	5	86,360,028

Part XII Reconciliation of Expenses per Audited Financial Statements With Expenses per Return.

Complete if the organization answered 'Yes' on Form 990, Part IV, line 12a.

1	Total expenses and losses per audited financial statements	1	139,010,767
2	Amounts included on line 1 but not on Form 990, Part IX, line 25:		
a	Donated services and use of facilities	2a	
b	Prior year adjustments	2b	
c	Other losses	2c	
d	Other (Describe in Part XIII.)	2d	47,409,977
e	Add lines 2a through 2d	2e	47,409,977
3	Subtract line 2e from line 1	3	91,600,790
4	Amounts included on Form 990, Part IX, line 25, but not on line 1 :		
a	Investment expenses not included on Form 990, Part VIII, line 7b	4a	
b	Other (Describe in Part XIII.)	4b	8,040,938
c	Add lines 4a and 4b	4c	8,040,938
5	Total expenses. Add lines 3 and 4c . (This must equal Form 990, Part I, line 18.)	5	99,641,728

Part XIII Supplemental Information

Provide the descriptions required for Part II, lines 3, 5, and 9; Part III, lines 1a and 4; Part IV, lines 1b and 2b; Part V, line 4; Part X, line 2; Part XI, lines 2d and 4b; and Part XII, lines 2d and 4b. Also complete this part to provide any additional information.

Return Reference	Explanation
See Additional Data Table	

Part XIII Supplemental Information *(continued)*

Return Reference	Explanation

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Supplemental Information

Return Reference	Explanation
PART X, LINE 2:	PART X, LINE 1(1) AND LINE 2: THERE ARE NO UNCERTAIN TAX POSITIONS RELATED TO VARI.

Supplemental Information	
Return Reference	Explanation
PART XI, LINE 2D - OTHER ADJUSTMENTS:	RENTAL EXPENSES 112,161. FUNDRAISING EVENT EXPENSE 59,275. ROYALTIES PAYOUT -78,255. ADDITIONAL IMPAIRMENT -800,228.

Supplemental Information	
Return Reference	Explanation
PART XI, LINE 4B - OTHER ADJUSTMENTS:	NET ALLOCATED 8,040,938.

Supplemental Information	
Return Reference	Explanation
PART XII, LINE 2D - OTHER ADJUSTMENTS:	RENTAL EXPENSES 112,161. FUNDRAISING EVENT EXPENSE 59,275. LOSS ON INTEREST RATE SWAP 48,117,024. ROYALTIES PAYOUT -78,255. ADDITIONAL IMPAIRMENT -800,228.

Supplemental Information	
Return Reference	Explanation
PART XII, LINE 4B - OTHER ADJUSTMENTS:	NET ALLOCATED 8,040,938.

Supplemental Information

Return Reference	Explanation
PART V	VAN ANDEL INSTITUTE (A RELATED ORGANIZATION) MAINTAINS ENDOWED FUNDS FOR THE BENEFIT OF BOTH VARI AND VAN ANDEL EDUCATION INSTITUTE (A RELATED ORGANIZATION) TO FUND OPERATING EXPENSES.

Supplemental Information	
Return Reference	Explanation
PART XI AND XII, LINE 4B	EXPENSE ALLOCATIONS PRESENTED WITHIN REVENUE.

**SCHEDULE F
(Form 990)**

Department of the Treasury
Internal Revenue Service

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Statement of Activities Outside the United States

- Complete if the organization answered "Yes" to Form 990, Part IV, line 14b, 15, or 16.
► Attach to Form 990.
► Go to www.irs.gov/Form990 for instructions and the latest information.

OMB No. 1545-0047

2018

**Open to Public
Inspection**

Employer identification number

52-2000823

Part I General Information on Activities Outside the United States. Complete if the organization answered "Yes" to Form 990, Part IV, line 14b.

1 For grantmakers. Does the organization maintain records to substantiate the amount of its grants and other assistance, the grantees' eligibility for the grants or assistance, and the selection criteria used to award the grants or assistance? ☒ **Yes** ☐ **No**

2 For grantmakers. Describe in Part V the organization's procedures for monitoring the use of its grants and other assistance outside the United States.

3 Activities per Region. (The following Part I, line 3 table can be duplicated if additional space is needed.)

(a) Region	(b) Number of offices in the region	(c) Number of employees, agents, and independent contractors in region	(d) Activities conducted in region (by type) (e.g., fundraising, program services, investments, grants to recipients located in the region)	(e) If activity listed in (d) is a program service, describe specific type of service(s) in region	(f) Total expenditures for and investments in region
See Add'l Data					
3a Sub-total	0	1			481,226
b Total from continuation sheets to Part I					0
c Totals (add lines 3a and 3b)	0	1			481,226

Part II Grants and Other Assistance to Organizations or Entities Outside the United States. Complete if the organization answered "Yes" to Form 990, Part IV, line 15, for any recipient who received more than \$5,000. Part II can be duplicated if additional space is needed.

1	(a) Name of organization	(b) IRS code section and EIN (if applicable)	(c) Region	(d) Purpose of grant	(e) Amount of cash grant	(f) Manner of cash disbursement	(g) Amount of non-cash assistance	(h) Description of non-cash assistance	(i) Method of valuation (book, FMV, appraisal, other)

- 2 Enter total number of recipient organizations listed above that are recognized as charities by the foreign country, recognized as tax-exempt by the IRS, or for which the grantee or counsel has provided a section 501(c)(3) equivalency letter ► _____
- 3 Enter total number of other organizations or entities ► _____

Part III	Grants and Other Assistance to Individuals Outside the United States. Complete if the organization answered "Yes" to Form 990, Part IV, line 16.
-----------------	---

Part III can be duplicated if additional space is needed.

[illegible]

Part IV Foreign Forms

- 1 Was the organization a U.S. transferor of property to a foreign corporation during the tax year? *If "Yes," the organization may be required to file Form 926, Return by a U.S. Transferor of Property to a Foreign Corporation (see Instructions for Form 926)* ☐ Yes ☒ No
- 2 Did the organization have an interest in a foreign trust during the tax year? *If "Yes," the organization may be required to separately file Form 3520, Annual Return to Report Transactions with Foreign Trusts and Receipt of Certain Foreign Gifts, and/or Form 3520-A, Annual Information Return of Foreign Trust With a U.S. Owner (see Instructions for Forms 3520 and 3520-A; don't file with Form 990)* ☐ Yes ☒ No
- 3 Did the organization have an ownership interest in a foreign corporation during the tax year? *If "Yes," the organization may be required to file Form 5471, Information Return of U.S. Persons with Respect to Certain Foreign Corporations. (see Instructions for Form 5471)* ☐ Yes ☒ No
- 4 Was the organization a direct or indirect shareholder of a passive foreign investment company or a qualified electing fund during the tax year? *If "Yes," the organization may be required to file Form 8621, Information Return by a Shareholder of a Passive Foreign Investment Company or Qualified Electing Fund. (see Instructions for Form 8621)* . ☐ Yes ☒ No
- 5 Did the organization have an ownership interest in a foreign partnership during the tax year? *If "Yes," the organization may be required to file Form 8865, Return of U.S. Persons with Respect to Certain Foreign Partnerships (see Instructions for Form 8865)* ☐ Yes ☒ No
- 6 Did the organization have any operations in or related to any boycotting countries during the tax year? *If "Yes," the organization may be required to separately file Form 5713, International Boycott Report (see Instructions for Form 5713; don't file with Form 990).* ☐ Yes ☒ No

Part V Supplemental Information

Provide the information required by Part I, line 2 (monitoring of funds); Part I, line 3, column (f) (accounting method; amounts of investments vs. expenditures per region); Part II, line 1 (accounting method); Part III (accounting method); and Part III, column (c) (estimated number of recipients), as applicable. Also complete this part to provide any additional information (see instructions).

990 Schedule F, Supplemental Information

Return Reference	Explanation
PART I, LINE 2:	GRANT FUNDS ARE MONITORED BY QUARTERLY EXPENDITURE REPORTS BEFORE DISBURSING INCREMENTAL FUNDING. PROGRESS REPORTS ARE REQUIRED ANNUALLY AND REVIEWED BY VAN ANDEL RESEARCH INSTITUTE AND A THIRD PARTY.

Additional Data

Software ID:

Software Version:

EIN: 52-2000823

Name: VAN ANDEL RESEARCH INSTITUTE

Form 990 Schedule F Part I - Activities Outside The United States

(a) Region	(b) Number of offices in the region	(c) Number of employees or agents in region	(d) Activities conducted in region (by type) (i.e., fundraising, program services, grants to recipients located in the region)	(e) If activity listed in (d) is a program service, describe specific type of service(s) in region	(f) Total expenditures for region
EAST ASIA & THE PACIFIC	0	1	PROGRAM SERVICES	RESEARCH COLLABORATION - RESEARCH SERVICES	74,971
EUROPE	0	0	PROGRAM SERVICES	RESEARCH COLLABORATION - RESEARCH SERVICES	366,102

Form 990 Schedule F Part I - Activities Outside The United States

(a) Region	(b) Number of offices in the region	(c) Number of employees or agents in region	(d) Activities conducted in region (by type) (i.e., fundraising, program services, grants to recipients located in the region)	(e) If activity listed in (d) is a program service, describe specific type of service(s) in region	(f) Total expenditures for region
NORTH AMERICA	0	0	PROGRAM SERVICES	RESEARCH COLLABORATION - RESEARCH SERVICES	40,153

Part II Fundraising Events. Complete if the organization answered "Yes" on Form 990, Part IV, line 18, or reported more than \$15,000 of fundraising event contributions and gross income on Form 990-EZ, lines 1 and 6b. List events with gross receipts greater than \$5,000.

		(a) Event #1	(b) Event #2	(c) Other events	(d)
		SOUTHSIDE (event type)	5K RACE (event type)	1 (total number)	Total events (add col. (a) through col. (c))
Revenue	1 Gross receipts	76,187	59,791	38,073	174,051
	2 Less: Contributions	76,187	49,531	38,073	163,791
	3 Gross income (line 1 minus line 2)		10,260		10,260
Direct Expenses	4 Cash prizes				
	5 Noncash prizes				
	6 Rent/facility costs				
	7 Food and beverages				
	8 Entertainment				
	9 Other direct expenses	14,386	26,135	18,754	59,275
	10 Direct expense summary. Add lines 4 through 9 in column (d) ▶				59,275
11 Net income summary. Subtract line 10 from line 3, column (d) ▶				-49,015	

Part III Gaming. Complete if the organization answered "Yes" on Form 990, Part IV, line 19, or reported more than \$15,000 on Form 990-EZ, line 6a.

		(a) Bingo	(b) Pull tabs/Instant bingo/progressive bingo	(c) Other gaming	(d) Total gaming (add col.(a) through col.(c))
Revenue	1 Gross revenue				
Direct Expenses	2 Cash prizes				
	3 Noncash prizes				
	4 Rent/facility costs				
	5 Other direct expenses				
	6 Volunteer labor	<input type="checkbox"/> Yes _____ % <input type="checkbox"/> No	<input type="checkbox"/> Yes _____ % <input type="checkbox"/> No	<input type="checkbox"/> Yes _____ % <input type="checkbox"/> No	
	7 Direct expense summary. Add lines 2 through 5 in column (d) ▶				
	8 Net gaming income summary. Subtract line 7 from line 1, column (d) ▶				

9 Enter the state(s) in which the organization conducts gaming activities: _____

a Is the organization licensed to conduct gaming activities in each of these states? ☐ Yes ☐ No

b If "No," explain: _____

10a Were any of the organization's gaming licenses revoked, suspended or terminated during the tax year? ☐ Yes ☐ No

b If "Yes," explain: _____

11	Does the organization conduct gaming activities with nonmembers?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
12	Is the organization a grantor, beneficiary or trustee of a trust or a member of a partnership or other entity formed to administer charitable gaming?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
13	Indicate the percentage of gaming activity conducted in:		
a	The organization's facility	13a	%
b	An outside facility	13b	%

14 Enter the name and address of the person who prepares the organization's gaming/special events books and records:

Name ►

Address ►

15a Does the organization have a contract with a third party from whom the organization receives gaming revenue? ☐ Yes ☐ No

b If "Yes," enter the amount of gaming revenue received by the organization ► \$ _____ and the amount of gaming revenue retained by the third party ► \$ _____.

c If "Yes," enter name and address of the third party:

Name ►

Address ►

16 Gaming manager information:

Name ►

Gaming manager compensation ► \$

Description of services provided ►

☐ Director/officer

☐ Employee

☐ Independent contractor

17 Mandatory distributions:

a Is the organization required under state law to make charitable distributions from the gaming proceeds to retain the state gaming license? ☐ Yes ☐ No

b Enter the amount of distributions required under state law distributed to other exempt organizations or spent in the organization's own exempt activities during the tax year ► \$ _____

Part IV Supplemental Information. Provide the explanations required by Part I, line 2b, columns (iii) and (v); and Part III, lines 9, 9b, 10b, 15b, 15c, 16, and 17b, as applicable. Also provide any additional information. See instructions.

Return Reference

Explanation

Note: To capture the full content of this document, please select landscape mode (11" x 8.5") when printing.

Schedule I
(Form 990)

Department of the Treasury
Internal Revenue Service

**Grants and Other Assistance to Organizations,
Governments and Individuals in the United States**
Complete if the organization answered "Yes," on Form 990, Part IV, line 21 or 22.
▶ Attach to Form 990.
▶ Go to www.irs.gov/Form990 for the latest information.

OMB No. 1545-0047

2018
Open to Public Inspection

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I

General Information on Grants and Assistance

- 1 Does the organization maintain records to substantiate the amount of the grants or assistance, the grantees' eligibility for the grants or assistance, and the selection criteria used to award the grants or assistance?

☒ Yes ☐ No
- 2 Describe in Part IV the organization's procedures for monitoring the use of grant funds in the United States.

Part II

Grants and Other Assistance to Domestic Organizations and Domestic Governments. Complete if the organization answered "Yes" on Form 990, Part IV, line 21, for any recipient that received more than \$5,000. Part II can be duplicated if additional space is needed.

(a) Name and address of organization or government	(b) EIN	(c) IRC section (if applicable)	(d) Amount of cash grant	(e) Amount of non-cash assistance	(f) Method of valuation (book, FMV, appraisal, other)	(g) Description of noncash assistance	(h) Purpose of grant or assistance
(1) FRIENDS OF CRESCENT PARK 333 BOSTWICK NE GRAND RAPIDS, MI 49503	26-4562012	501C3	9,750				SUPPORT CRESCENT PARK MAINTENANCE
(2) STAND UP TO CANCER 10880 WILSHIRE BLVD SUITE 1400 LOS ANGELES, CA 90024	95-1644609	501C3	1,484,681				RESEARCH COLLABORATION

2 Enter total number of section 501(c)(3) and government organizations listed in the line 1 table 2

3 Enter total number of other organizations listed in the line 1 table 0

Part III Grants and Other Assistance to Domestic Individuals. Complete if the organization answered "Yes" on Form 990, Part IV, line 22.
Part III can be duplicated if additional space is needed.

(a) Type of grant or assistance	(b) Number of recipients	(c) Amount of cash grant	(d) Amount of noncash assistance	(e) Method of valuation (book, FMV, appraisal, other)	(f) Description of noncash assistance
(1) GRADUATE STUDENT STIPENDS FOR MICHIGAN STATE UNIVERSITY STUDENTS	3	86,290			
(2) GRADUATE STUDENT STIPENDS VAN ANDEL INSTITUTE GRADUATE SCHOOL	4	120,666			
(3) FOREIGN NATIONAL STIPENDS	5	107,563			
(4) GUEST STUDENT STIPENDS	4	44,148			
(5) VAN ANDEL INSTITUTE GRADUATE SCHOOL STUDENT TUITION AND FEES REMISSION	25		580,000		TUITION REMISSION.
(5)					
(6)					
(7)					

Part IV Supplemental Information. Provide the information required in Part I, line 2; Part III, column (b); and any other additional information.

Return Reference	Explanation
PART I, LINE 2:	STUDENTS RECEIVE A STIPEND FOR LIVING EXPENSE AND INSURANCE. GRANT FUNDS TO INSTITUTIONS ARE MONITORED BY QUARTERLY EXPENDITURE REPORTS BEFORE DISBURSING INCREMENTAL FUNDING. PROGRESS REPORTS ARE REQUIRED ANNUALLY AND REVIEWED BY VAN ANDEL RESEARCH INSTITUTE AND A THIRD PARTY.

Schedule J (Form 990)	Compensation Information	OMB No. 1545-0047
		2018
Department of the Treasury Internal Revenue Service	For certain Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees ▶ Complete if the organization answered "Yes" on Form 990, Part IV, line 23. ▶ Attach to Form 990. ▶ Go to www.irs.gov/Form990 for instructions and the latest information.	
Name of the organization VAN ANDEL RESEARCH INSTITUTE		Employer identification number 52-2000823

Part I Questions Regarding Compensation		Yes	No
1a Check the appropriate box(es) if the organization provided any of the following to or for a person listed on Form 990, Part VII, Section A, line 1a. Complete Part III to provide any relevant information regarding these items.			
<input checked="" type="checkbox"/> First-class or charter travel	<input type="checkbox"/> Housing allowance or residence for personal use		
<input type="checkbox"/> Travel for companions	<input type="checkbox"/> Payments for business use of personal residence		
<input type="checkbox"/> Tax idemnification and gross-up payments	<input type="checkbox"/> Health or social club dues or initiation fees		
<input type="checkbox"/> Discretionary spending account	<input type="checkbox"/> Personal services (e.g., maid, chauffeur, chef)		
b If any of the boxes in line 1a are checked, did the organization follow a written policy regarding payment or reimbursement or provision of all of the expenses described above? If "No," complete Part III to explain		1b Yes	
2 Did the organization require substantiation prior to reimbursing or allowing expenses incurred by all directors, trustees, officers, including the CEO/Executive Director, regarding the items checked in line 1a?		2 Yes	
3 Indicate which, if any, of the following the filing organization used to establish the compensation of the organization's CEO/Executive Director. Check all that apply. Do not check any boxes for methods used by a related organization to establish compensation of the CEO/Executive Director, but explain in Part III.			
<input checked="" type="checkbox"/> Compensation committee	<input type="checkbox"/> Written employment contract		
<input checked="" type="checkbox"/> Independent compensation consultant	<input checked="" type="checkbox"/> Compensation survey or study		
<input type="checkbox"/> Form 990 of other organizations	<input checked="" type="checkbox"/> Approval by the board or compensation committee		
4 During the year, did any person listed on Form 990, Part VII, Section A, line 1a, with respect to the filing organization or a related organization:			
a Receive a severance payment or change-of-control payment?		4a	No
b Participate in, or receive payment from, a supplemental nonqualified retirement plan?		4b	No
c Participate in, or receive payment from, an equity-based compensation arrangement?		4c	No
If "Yes" to any of lines 4a-c, list the persons and provide the applicable amounts for each item in Part III.			
Only 501(c)(3), 501(c)(4), and 501(c)(29) organizations must complete lines 5-9.			
5 For persons listed on Form 990, Part VII, Section A, line 1a, did the organization pay or accrue any compensation contingent on the revenues of:			
a The organization?		5a Yes	
b Any related organization?		5b	No
If "Yes," on line 5a or 5b, describe in Part III.			
6 For persons listed on Form 990, Part VII, Section A, line 1a, did the organization pay or accrue any compensation contingent on the net earnings of:			
a The organization?		6a	No
b Any related organization?		6b	No
If "Yes," on line 6a or 6b, describe in Part III.			
7 For persons listed on Form 990, Part VII, Section A, line 1a, did the organization provide any nonfixed payments not described in lines 5 and 6? If "Yes," describe in Part III.		7	No
8 Were any amounts reported on Form 990, Part VII, paid or accrued pursuant to a contract that was subject to the initial contract exception described in Regulations section 53.4958-4(a)(3)? If "Yes," describe in Part III.		8	No
9 If "Yes" on line 8, did the organization also follow the rebuttable presumption procedure described in Regulations section 53.4958-6(c)?		9	

Part II Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees. Use duplicate copies if additional space is needed.

For each individual whose compensation must be reported on Schedule J, report compensation from the organization on row (i) and from related organizations, described in the instructions, on row (ii). Do not list any individuals that are not listed on Form 990, Part VII.

Note. The sum of columns (B)(i)-(iii) for each listed individual must equal the total amount of Form 990, Part VII, Section A, line 1a, applicable column (D) and (E) amounts for that individual.

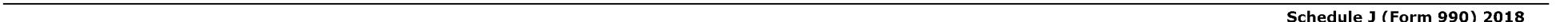
(A) Name and Title		(B) Breakdown of W-2 and/or 1099-MISC compensation			(C) Retirement and other deferred compensation	(D) Nontaxable benefits	(E) Total of columns (B)(i)-(D)	(F) Compensation in column (B) reported as deferred on prior Form 990
		(i) Base compensation	(ii) Bonus & incentive compensation	(iii) Other reportable compensation				
1 DAVID VAN ANDEL CHAIRMAN / CEO	(i)	386,538 -----	101,250 -----	22,219 -----	111,250 -----	1,065 -----	622,322 -----	101,250 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
2 DR JANA HALL CHIEF OPERATIONS OFFICER	(i)	358,411 -----	95,900 -----	3,574 -----	99,609 -----	11,120 -----	568,614 -----	95,900 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
3 TIMOTHY MYERS V.P. & CHIEF FINANCIAL OFFICER	(i)	277,311 -----	55,485 -----	1,292 -----	74,429 -----	11,120 -----	419,637 -----	55,485 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
4 DR PETER JONES CHIEF SCIENTIFIC OFFICER & RES. DIR.	(i)	562,039 -----	154,092 -----	19,953 -----	157,832 -----	11,120 -----	905,036 -----	154,092 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
5 KATHY VOGELSANG CHIEF INVESTMENT OFFICER	(i)	415,872 -----	333,300 -----	20,822 -----	277,330 -----	11,120 -----	1,058,444 -----	333,300 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
6 DR PATRIK BRUNDIN ASSOCIATE RESEARCH DIRECTOR	(i)	447,903 -----	63,679 -----	2,322 -----	76,467 -----	11,120 -----	601,491 -----	63,679 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
7 DR PETER LAIRD INVESTIGATOR	(i)	387,088 -----	20,611 -----	2,327 -----	43,907 -----	11,120 -----	465,053 -----	20,611 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
8 TED HEILMAN ASSOC DIRECT-SR. PORTFOLIO MGR.	(i)	238,565 -----	194,425 -----	20,798 -----	168,298 -----	11,120 -----	633,206 -----	194,425 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----
9 DR SCOTT JEWELL DIR. PROGRAM FOR TECHNOLOGIES & CORE	(i)	304,772 -----	45,979 -----	25,363 -----	68,047 -----	11,120 -----	455,281 -----	0 -----
	(ii)	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----	0 -----

Part III **Supplemental Information**

Provide the information, explanation, or descriptions required for Part I, lines 1a, 1b, 3, 4a, 4b, 4c, 5a, 5b, 6a, 6b, 7, and 8, and for Part II. Also complete this part for any additional information.

Return Reference	Explanation
PART I, LINE 1A	VARI ALLOWS FOR FIRST-CLASS OR CHARTER TRAVEL FOR OFFICERS AND TRUSTEES.

Return Reference	Explanation
PART I, LINE 5	BONUS IS PAID BASED ON GRANT REVENUE EARNED FOR ELIGIBLE PROGRAM PARTICIPANTS.



Additional Data

Software ID:

Software Version:

EIN: 52-2000823

Name: VAN ANDEL RESEARCH INSTITUTE

Form 990, Schedule J, Part II - Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees

(A) Name and Title		(B) Breakdown of W-2 and/or 1099-MISC compensation			(C) Retirement and other deferred compensation	(D) Nontaxable benefits	(E) Total of columns (B)(i)-(D)	(F) Compensation in column (B) reported as deferred on prior Form 990
		(i) Base Compensation	(ii) Bonus & incentive compensation	(iii) Other reportable compensation				
DAVID VAN ANDEL CHAIRMAN / CEO	(i)	386,538	101,250	22,219	111,250	1,065	622,322	101,250
	(ii)	0	0	0	0	0	0	0
DR JANA HALL CHIEF OPERATIONS OFFICER	(i)	358,411	95,900	3,574	99,609	11,120	568,614	95,900
	(ii)	0	0	0	0	0	0	0
TIMOTHY MYERS V.P. & CHIEF FINANCIAL OFFICER	(i)	277,311	55,485	1,292	74,429	11,120	419,637	55,485
	(ii)	0	0	0	0	0	0	0
DR PETER JONES CHIEF SCIENTIFIC OFFICER & RES. DIR.	(i)	562,039	154,092	19,953	157,832	11,120	905,036	154,092
	(ii)	0	0	0	0	0	0	0
KATHY VOGELSANG CHIEF INVESTMENT OFFICER	(i)	415,872	333,300	20,822	277,330	11,120	1,058,444	333,300
	(ii)	0	0	0	0	0	0	0
DR PATRIK BRUNDIN ASSOCIATE RESEARCH DIRECTOR	(i)	447,903	63,679	2,322	76,467	11,120	601,491	63,679
	(ii)	0	0	0	0	0	0	0
DR PETER LAIRD INVESTIGATOR	(i)	387,088	20,611	2,327	43,907	11,120	465,053	20,611
	(ii)	0	0	0	0	0	0	0
TED HEILMAN ASSOC DIRECT-SR. PORTFOLIO MGR.	(i)	238,565	194,425	20,798	168,298	11,120	633,206	194,425
	(ii)	0	0	0	0	0	0	0
DR SCOTT JEWELL DIR. PROGRAM FOR TECHNOLOGIES & CORE	(i)	304,772	45,979	25,363	68,047	11,120	455,281	0
	(ii)	0	0	0	0	0	0	0

Note: To capture the full content of this document, please select landscape mode (11" x 8.5") when printing.

Schedule K
(Form 990)

Department of the Treasury
Internal Revenue Service

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Supplemental Information on Tax-Exempt Bonds

► Complete if the organization answered "Yes" to Form 990, Part VI, line 24a. Provide descriptions, explanations, and any additional information in Part VI.
► Attach to Form 990.
► Go to www.irs.gov/Form990 for the latest information.

OMB No. 1545-0047

2018

Open to Public Inspection

Employer identification number
52-2000823

Part I Bond Issues											
(a) Issuer name	(b) Issuer EIN	(c) CUSIP #	(d) Date issued	(e) Issue price	(f) Description of purpose	(g) Defeased		(h) On behalf of issuer		(i) Pool financing	
						Yes	No	Yes	No	Yes	No
A MICHIGAN STRATEGIC FUND	52-1417332	000000000	10-01-2018	220,000,000	REFUND BOND ISSUE 4/01/13		X		X		X

Part II		Proceeds							
		A		B		C		D	
1	Amount of bonds retired								
2	Amount of bonds legally defeased								
3	Total proceeds of issue	220,000,000							
4	Gross proceeds in reserve funds								
5	Capitalized interest from proceeds								
6	Proceeds in refunding escrows								
7	Issuance costs from proceeds								
8	Credit enhancement from proceeds								
9	Working capital expenditures from proceeds								
10	Capital expenditures from proceeds								
11	Other spent proceeds	220,000,000							
12	Other unspent proceeds								
13	Year of substantial completion								
		Yes	No	Yes	No	Yes	No	Yes	No
14	Were the bonds issued as part of a current refunding issue?	X							
15	Were the bonds issued as part of an advance refunding issue?		X						
16	Has the final allocation of proceeds been made?	X							
17	Does the organization maintain adequate books and records to support the final allocation of proceeds?	X							

Part III Private Business Use									
		A		B		C		D	
		Yes	No	Yes	No	Yes	No	Yes	No
1	Was the organization a partner in a partnership, or a member of an LLC, which owned property financed by tax-exempt bonds?		X						
2	Are there any lease arrangements that may result in private business use of bond-financed property?	X							

Part III Private Business Use (Continued)

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
3a Are there any management or service contracts that may result in private business use of bond-financed property?	X							
b If "Yes" to line 3a, does the organization routinely engage bond counsel or other outside counsel to review any management or service contracts relating to the financed property?	X							
c Are there any research agreements that may result in private business use of bond-financed property?	X							
d If "Yes" to line 3c, does the organization routinely engage bond counsel or other outside counsel to review any research agreements relating to the financed property?	X							
4 Enter the percentage of financed property used in a private business use by entities other than a section 501(c)(3) organization or a state or local government ▶								
5 Enter the percentage of financed property used in a private business use as a result of unrelated trade or business activity carried on by your organization, another section 501(c)(3) organization, or a state or local government ▶	0.440 %							
6 Total of lines 4 and 5	0.440 %							
7 Does the bond issue meet the private security or payment test? . . .		X						
8a Has there been a sale or disposition of any of the bond-financed property to a nongovernmental person other than a 501(c)(3) organization since the bonds were issued?		X						
b If "Yes" to line 8a, enter the percentage of bond-financed property sold or disposed of. . .								
c If "Yes" to line 8a, was any remedial action taken pursuant to Regulations sections 1.141-12 and 1.145-2?								
9 Has the organization established written procedures to ensure that all nonqualified bonds of the issue are remediated in accordance with the requirements under Regulations sections 1.141-12 and 1.145-2?	X							

Part IV Arbitrage

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
1 Has the issuer filed Form 8038-T, Arbitrage Rebate, Yield Reduction and Penalty in Lieu of Arbitrage Rebate? . . .		X						
2 If "No" to line 1, did the following apply?								
a Rebate not due yet?	X							
b Exception to rebate?		X						
c No rebate due?		X						
If "Yes" to line 2c, provide in Part VI the date the rebate computation was performed								
3 Is the bond issue a variable rate issue?	X							
4a Has the organization or the governmental issuer entered into a qualified hedge with respect to the bond issue?		X						
b Name of provider								
c Term of hedge								
d Was the hedge superintegrated?								
e Was the hedge terminated?								

Part IV Arbitrage (Continued)

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
5a Were gross proceeds invested in a guaranteed investment contract (GIC)?		X						
b Name of provider								
c Term of GIC								
d Was the regulatory safe harbor for establishing the fair market value of the GIC satisfied?								
6 Were any gross proceeds invested beyond an available temporary period?		X						
7 Has the organization established written procedures to monitor the requirements of section 148?	X							

Part V Procedures To Undertake Corrective Action

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
Has the organization established written procedures to ensure that violations of federal tax requirements are timely identified and corrected through the voluntary closing agreement program if self-remediation is not available under applicable regulations?	X							

Part VI Supplemental Information. Provide additional information for responses to questions on Schedule K (see instructions).

SCHEDULE M
(Form 990)

Noncash Contributions

►Complete if the organizations answered "Yes" on Form 990, Part IV, lines 29 or 30.
►Attach to Form 990.
►Go to www.irs.gov/Form990 for the latest information.

OMB No. 1545-0047
2018
Open to Public Inspection

Department of the Treasury
Internal Revenue Service

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I

Types of Property

	(a) Check if applicable	(b) Number of contributions or items contributed	(c) Noncash contribution amounts reported on Form 990, Part VIII, line 1g	(d) Method of determining noncash contribution amounts
1 Art—Works of art				
2 Art—Historical treasures				
3 Art—Fractional interests				
4 Books and publications				
5 Clothing and household goods	X		7,958	COST
6 Cars and other vehicles				
7 Boats and planes				
8 Intellectual property				
9 Securities—Publicly traded	X	1	10,156	NYSE VALUE
10 Securities—Closely held stock				
11 Securities—Partnership, LLC, or trust interests				
12 Securities—Miscellaneous				
13 Qualified conservation contribution—Historic structures				
14 Qualified conservation contribution—Other				
15 Real estate—Residential				
16 Real estate—Commercial				
17 Real estate—Other				
18 Collectibles	X	3	620	COST
19 Food inventory	X	4	2,165	COST
20 Drugs and medical supplies				
21 Taxidermy				
22 Historical artifacts				
23 Scientific specimens				
24 Archeological artifacts				
25 Other ► (GIFT CARDS)	X	15	4,183	COST
26 Other ► (TICKETS)	X	4	1,052	COST
27 Other ► (MISCELLANEOUS)	X	11	585	COST
28 Other ► ()				

29 Number of Forms 8283 received by the organization during the tax year for contributions for which the organization completed Form 8283, Part IV, Donee Acknowledgement

290

30a During the year, did the organization receive by contribution any property reported in Part I, lines 1 through 28, that it must hold for at least three years from the date of the initial contribution, and which is not required to be used for exempt purposes for the entire holding period?

30a

Yes

No

b If "Yes," describe the arrangement in Part II.

31 Does the organization have a gift acceptance policy that requires the review of any nonstandard contributions?

31

Yes

No

32a Does the organization hire or use third parties or related organizations to solicit, process, or sell noncash contributions?

32a

Yes

No

b If "Yes," describe in Part II.

33 If the organization did not report an amount in column (c) for a type of property for which column (a) is checked, describe in Part II.

Part II **Supplemental Information.**

Provide the information required by Part I, lines 30b, 32b, and 33, and whether the organization is reporting in Part I, column (b), the number of contributions, the number of items received, or a combination of both. Also complete this part for any additional information.

Return Reference	Explanation
PART I, COLUMN (B):	VARI IS REPORTING THE NUMBER OF CONTRIBUTIONS RECEIVED DURING THE TAX YEAR.

SCHEDULE O
(Form 990 or 990-EZ)

Department of the Treasury

Internal Revenue Service

NAME OF THE ORGANIZATION
VAN ANDEL RESEARCH INSTITUTE

Supplemental Information to Form 990 or 990-EZ

Complete to provide information for responses to specific questions on
Form 990 or 990-EZ or to provide any additional information.

▶ Attach to Form 990 or 990-EZ.

▶ Go to www.irs.gov/Form990 for the latest information.

OMB No. 1545-0047

2018

**Open to Public
Inspection**

Employer identification number

52-2000823

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION A, LINE 2	VARI, VAI, VAEI, AND VAIGS SHARE COMMON MANAGEMENT. DAVID VAN ANDEL, DR. JANA HALL AND TIMOTHY MYERS ARE ALSO OFFICERS OF VAI, AND DAVID VAN ANDEL AND TIMOTHY MYERS ARE OFFICERS OF VAEI AND VAIGS.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION A, LINE 7A	THE TRUSTEES OF VAN ANDEL INSTITUTE HAVE THE AUTHORITY TO ELECT ONE OR MORE MEMBERS OF VARI'S GOVERNING BODY.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION B, LINE 11B	FOLLOWING COMPLETION OF THE FINANCIAL STATEMENT AUDIT, THE FORM 990 IS PREPARED AND REVIEWED BY MANAGEMENT. IT IS THEN CIRCULATED TO THE FULL BOARD FOR REVIEW AND COMMENTS PRIOR TO FILING WITH THE IRS.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION B, LINE 12C	<p>VARI HAS WRITTEN CONFLICT OF INTEREST ("COI") POLICIES AND PROCEDURES WHICH ADMINISTER AND ENFORCE A PROCESS TO IDENTIFY, EVALUATE, AND MANAGE POTENTIAL CONFLICTS OF INTEREST. THESE POLICIES HAVE BEEN APPROVED BY THE BOARD OF TRUSTEES. VAI ADMINISTERS COI POLICIES AND PROCEDURES THROUGH TWO STANDING COMMITTEES: THE CONFLICTS COMMITTEE ("CC") AND THE INSTITUTIONAL COI COMMITTEE ("ICOIC"). COI POLICIES AND PROCEDURES APPLY TO AND SERVE AS A GUIDE FOR EVERYONE IN THE ORGANIZATION. IN PARTICULAR, THEY PROVIDE A USEFUL RESOURCE FOR DEVELOPING ACTIVITIES OR RELATIONSHIPS WITH OUTSIDE ENTITIES OR PERSONS, AND ESTABLISH A PROCESS FOR COMMITTEES TO REVIEW AND MANAGE POTENTIAL CONFLICTS OF INTEREST AS THEY MAY ARISE. THE CC AND ICOIC ARE CHAIRED BY THE GENERAL COUNSEL. THE CC REQUIRES ANNUAL AND UPDATED DISCLOSURES BY COVERED PERSONS AND REVIEWS AND APPROVES MANAGEMENT PLANS. ICOIC POLICIES AND PROCEDURES SERVE AS A GUIDE FOR BOARDS OF TRUSTEES AND SENIOR EXECUTIVES. IN THE EVENT A POTENTIAL COI ARISES AT THE BOARD OR SENIOR EXECUTIVE LEVEL, THE ICOIC MEETS TO REVIEW AND DETERMINE HOW TO MANAGE SUCH A POTENTIAL CONFLICT OF INTEREST IN ACCORDANCE WITH THE COI POLICIES AND PROCEDURES.</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION B, LINE 15	COMPARABILITY DATA FROM AN EXPERT THIRD PARTY IS OBTAINED AND REVIEWED BY THE INDEPENDENT, JOINT COMPENSATION COMMITTEE OF VAN ANDEL RESEARCH INSTITUTE AND RELATED ORGANIZATIONS TO DETERMINE APPROPRIATE COMPENSATION FOR THE CEO, EXECUTIVE MANAGEMENT OFFICIALS, OFFICERS, AND KEY EMPLOYEES, ON BEHALF OF VAN ANDEL RESEARCH INSTITUTE.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION C, LINE 19	ALL DOCUMENTS REQUIRED TO BE MADE AVAILABLE TO THE PUBLIC ARE AVAILABLE FOR PUBLIC INSPECTION UPON WRITTEN REQUEST.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART XI, LINE 9:	LOSS ON INTEREST RATE SWAP -48,117,024.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 2	<p>VAN ANDEL RESEARCH INSTITUTE (VARI) IS DEDICATED TO DETERMINING THE EPIGENETIC, GENETIC, MOLECULAR, AND CELLULAR ORIGINS OF CANCER, PARKINSON'S DISEASE, AND OTHER ILLNESSES AND TO TRANSLATING THOSE FINDINGS INTO EFFECTIVE THERAPIES. THE INSTITUTE'S SCIENTISTS WORK IN ON-SITE LABORATORIES AND PARTICIPATE IN COLLABORATIONS THAT SPAN THE GLOBE. WITH EPIGENETICS AS ITS COMMON THREAD, THE INSTITUTE IS ORGANIZED INTO THE CENTER FOR CANCER AND CELL BIOLOGY, THE CENTER FOR EPIGENETICS, AND THE CENTER FOR NEURODEGENERATIVE SCIENCE. THE INSTITUTE'S LABS ARE SUPPORTED BY AN OUTSTANDING CORE TECHNOLOGIES AND SERVICES GROUP, WHICH PROVIDES A VIVARIUM, A BIOREPOSITORY, AND VALUABLE ON-SITE CAPABILITIES IN IMAGING, PATHOLOGY, BIOINFORMATICS AND BIOSTATISTICS, GENOMICS, FLOW CYTOMETRY, METABOLOMICS AND BIOENERGETICS AND CRYO-ELECTRON MICROSCOPY. VARI SCIENTISTS PUBLISHED 111 ARTICLES IN THIS FISCAL YEAR IN PEER-REVIEWED JOURNALS THAT INCLUDED NATURE, SCIENCE, CELL REPORTS, NATURE COMMUNICATIONS, NATURE STRUCTURAL AND MOLECULAR BIOLOGY, SCIENCE ADVANCES, CELL REPORTS, NATURE IMMUNOLOGY, CANCER RESEARCH, IMMUNITY, CLINICAL CANCER RESEARCH, MOLECULAR NEURODEGENERATION, LANCET NEUROLOGY, NUCLEIC ACIDS RESEARCH, TRENDS IN NEUROSCIENCES, GENOME BIOLOGY, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U.S.A., CANCER CELL, THERANOSTICS, ELIFE, MOLECULAR CELL, JOURNAL OF THE NATIONAL CANCER INSTITUTE, ACTA NEUROPATHOLOGICA COMMUNICATIONS, EUROPEAN HEART JOURNAL, CIRCULATION RESEARCH, GASTROENTEROLOGY, JOURNAL OF BIOLOGICAL CHEMISTRY, NJP PARKINSON'S DISEASE, PROTEIN SCIENCE, MOLECULAR CELL, BIOCHEMISTRY, BIOINFORMATICS, CLINICAL EPIGENETICS, ISCIENCE, NEUROBIOLOGY OF DISEASE, MOLECULAR AND CELLULAR PROTEOMICS, MOLECULAR CANCER THERAPEUTICS, AND JOURNAL OF CHEMICAL THEORY AND COMPUTATION.</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4A	<p>LINE 4A - PROGRAM SERVICE ACTIVITY #1 CENTER FOR CANCER AND CELL BIOLOGY THE CENTER FOR CA NCER AND CELL BIOLOGY, DIRECTED BY BART WILLIAMS, PH.D., COMPRISES 14 LABORATORIES ENGAGED IN BASIC RESEARCH IN MOLECULAR AND STRUCTURAL BIOLOGY AND IN TRANSLATIONAL RESEARCH ON CA NCER, SKELETAL DISEASES, AND METABOLISM AND NUTRITION. THE CENTER IS DIVIDED INTO PROGRAMS IN STRUCTURAL BIOLOGY; SKELETAL DISEASE AND CANCER THERAPEUTICS; AND METABOLIC AND NUTRIT IONAL PROGRAMMING. IN THIS FISCAL YEAR, RESEARCHERS AND TRAINEES WITHIN THE CENTER RECEIVE D THREE NEW R01'S, A U01, AN R35, AND AN F31 FELLOWSHIP FROM THE NATIONAL INSTITUTES OF HE ALTH. OTHER NEW AWARDS WERE FROM THE NATIONAL SCIENCE FOUNDATION, DEPARTMENT OF DEFENSE, D EPARTMENT OF ENERGY, AND THE BREAST CANCER RESEARCH FOUNDATION. TWO NEW RESEARCH CONTRACTS WERE SIGNED IN 2019, AND FOUR GRANT SUBAWARDS AND TWO NON-NIH POSTDOCTORAL FELLOWSHIPS WE RE RECEIVED. IN THE STRUCTURAL BIOLOGY PROGRAM, HUILIN LI'S LAB PRODUCED SEVERAL PAPERS. T HEY STUDIED THE DRS2P-CDC50P COMPLEX THAT MAINTAINS CELL MEMBRANE ASYMMETRY, SOLVING THE C RYO-EM STRUCTURES OF INTACT DRS2P-CDC50P ISOLATED FROM S. CEREVISIAE IN THE INACTIVE APO F ORM AND IN THE PI4P-ACTIVATED FORM AT 2.8 ANGSTROM AND 3.3 ANGSTROM RESOLUTION, RESPECTIVE LY. THIS STUDY UNCOVERED THE MECHANISM BY WHICH THE ENZYME IS ACTIVATED (BAI ET AL., NATUR E COMMUNICATIONS 10: 4142). ANOTHER STUDY REPORTED THE CRYO-EM STRUCTURES OF THE S. CEREVI SIAE PMT1-PMT2 COMPLEX. EACH SUBUNIT CONTAINS 11 TRANSMEMBRANE HELICES AS WELL AS A LUMENA L BETA-TREFOIL FOLD TERMED THE MIR DOMAIN. FROM THESE STRUCTURES, THE LAB WAS ABLE TO SHOW HOW THE ENZYMES RECOGNIZE THEIR SUBSTRATE MOLECULES. (BAI ET AL., NATURE STRUCTURAL AND M OLECULAR BIOLOGY 26: 704-711). A THIRD PAPER REPORTED THE STRUCTURES OF THE RV3679-RV3680 COMPLEX IN THE TUBERCULOSIS-CAUSING MYCOBACTERIUM TUBERCULOSIS. THESE PROTEINS HAVE NEVER BEEN THOROUGHLY STUDIED BEFORE, AND THIS WORK FOUND THAT THEY ARE SIMILAR TO THE UKARYOTIC GET3 AND ARSA PROTEINS. THIS PAPER THUS HAS IDENTIFIED A NEW CLASS OF BACTERIAL PROTEINS THAT HAVE FUNCTIONS WE DO NOT YET UNDERSTAND (HU ET AL., JOURNAL OF BACTERIOLOGY 201(14): E00159-19). FINALLY, THE H. LI LAB PARTICIPATED IN DEVELOPING COMPO UNDS THAT ARE POTENT INHIBITORS OF THE M. TUBERCULOSIS PROTEASOME, WHICH IS A CELLULAR COMPONENT THAT BREAKS DOWN UNNEEDED OR DAMAGED PROTEINS. THE STRUCTURE OF THE PROTEOSOME PLUS INHIBITOR SUGGESTS WHY THE INHIBITORS WORK ONLY AGAINST THE BACTERIAL PROTEOSOME BUT NOT THE HUMAN CELL PROTEOSO ME. THIS KNOWLEDGE COULD AID THE DEVELOPMENT OF NEW DRUGS AGAINST TUBERCULOSIS (ZHAN ET AL ., JOURNAL OF MEDICINAL CHEMISTRY 62 (20): 9246-9253). STRUCTURAL RESEARCH IN THE MELCHER A ND XU LABS ALSO PRODUCED SEVERAL PAPERS. ONE STUDY DEVELOPED NEW DRUG CANDIDATES AGAINST A STHMA BASED ON STRUCTURAL ANALYSES OF THE GLUCOCORTICOID RECEPTOR (GR). ONE OF THOSE COMPO UNDS, VSG158, REPRESSED LUNG INFLAMMATION AND WAS 10 TIMES MORE POTENT IN A MOUSE MODEL TH AN THE BEST GLUCOCORTICOID NOW</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4A	<p>IN CLINICAL USE, FLUTICASONE FUROATE. BOTH VSG158 AND VSG159 DELIVERED EFFECTIVE TREATMENT AND REDUCED OFF-TARGET AND SIDE EFFECTS. THEY HAVE PHARMACOKINETIC PROPERTIES THAT ARE SUITABLE FOR INHALATION TREATMENT OF ASTHMA (HE ET AL., PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U.S.A. 116(14): 6932-6937). THE LABS ALSO COMPLETED A STUDY ON THE HUMAN PARATHYROID HORMONE RECEPTOR-1 (PTH1R), WHICH IS A THERAPEUTIC TARGET IN OSTEOPOROSIS AND HYPOPARATHYROIDISM. THE STRUCTURE OF PTH1R BOUND TO A LONG-ACTING PTH ANALOG AND A STIMULATORY G PROTEIN WAS SOLVED. THIS RESEARCH PROVIDES INSIGHT INTO THE DYNAMICS OF PTH BINDING TO THE RECEPTOR AND RECEPTOR ACTIVATION (ZHAO ET AL., SCIENCE 364(6436): 148-153). THEY ALSO PUBLISHED A PAPER ON THE ARTHROBACTER GLOBIFORMIS URICASE ENZYME, WHICH HAS POTENTIAL AS A DRUG AGAINST HYPERURICEMIA-RELATED DISEASES. DISULFIDE BOND CROSS-LINKING PROTECTED THE ENZYME FROM DEGRADATION. SUCH INTRODUCTION OF DISULFIDE BONDS MAY BE A GENERAL AVENUE FOR IMPROVING THE STABILITY OF MANY MULTIMERIC PROTEINS, WHICH COULD IMPROVE THEIR VALUE IN MEDICAL USE (SHI ET AL., ACTA PHARMACOLOGICA SINICA 40: 1364-1372). THE LU AND DU LABS TOGETHER PUBLISHED A STUDY ON THE HUMAN TRPM2 PROTEIN, WHICH IS INVOLVED IN BODY TEMPERATURE SENSING AND IN IMMUNE RESPONSES. THEY SHOWED THE STRUCTURAL REARRANGEMENTS AND CHANNEL ACTIVATION OF TRPM2 THAT WAS INDUCED BY THE BINDING OF ADPR IN TWO SPECIFIC LOCATIONS ON THE PROTEIN, AND THAT THE ACTIVATION PROCESS DIFFERS BETWEEN THE TRPM2 PROTEINS FROM VERTEBRATES AND INVERTEBRATES. THE STUDY PROVIDES INSIGHT INTO TRPM2 ACTIVATION AND ITS PHARMACOLOGICAL PROPERTIES (HUANG ET AL., ELIFE 8: E50175). THE HAAB LAB MADE PROGRESS IN ITS WORK ON DIAGNOSTICS AND BIOMARKERS OF PANCREATIC CANCER. THEY VALIDATED THAT A GLYCAN CALLED STRA WAS A BETTER BIOMARKER OF PANCREATIC DUCTAL ADENOCARCINOMA THAN THE TRADITIONAL BIOMARKER, CA19-9. IN TWO PANELS, ONE FOR SPECIFICITY AND ONE FOR SENSITIVITY, STRA WAS STATISTICALLY BETTER THAN CA19-9 IN BOTH. THIS WORK MAY IMPROVE DIFFERENTIAL DIAGNOSIS AMONG PATIENTS WITH SUSPECTED PANCREATIC CANCER (STAAL ET AL., CLINICAL CANCER RESEARCH 25(9): 2745-2754). THE LAB ALSO DEVELOPED A NEW WAY TO ANALYZE N-GLYCOPROTEINS IN SERUM. THE ANALYSIS USES MATRIX-ASSISTED LASER DESORPTION/IONIZATION MASS SPECTROMETRY IMAGING (MALDI MSI) AND ANTIBODY SLIDE ARRAYS. THIS NOVEL APPROACH CAN BE USED TO ANALYZE ANY GLYCOPROTEIN HAVING A VALIDATED ANTIBODY, AND IT CAN BE ADAPTED TO ANY BIOLOGICAL FLUID OR TISSUE SAMPLE THAT CAN BE ANALYZED BY ANTIBODY ARRAYS (BLACK ET AL., ANALYTICAL CHEMISTRY 91(13): 8429-8435). THIRD, THE LAB HAS DEVELOPED SOFTWARE CALLED SIGNALFINDER THAT USES A NEW ALGORITHM AND PERFORMS ROBUSTLY FOR THE AUTOMATED IDENTIFICATION OF MULTIPLE MARKERS IN A SINGLE SAMPLE. TWO UTILITIES PROVIDE 1) QUANTIFICATION AND MAPPING OF RELATIONSHIPS BETWEEN AN UNLIMITED NUMBER OF MARKERS AND 2) COMPOSITE PICTURES OF THE SIGNALS OR COLOCALIZATION ANALYSIS ON BRIGHTFIELD STAINED IMAGES. SIGNALFIN</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4A	<p>DER ALLOWS HIGH-THROUGHPUT, RIGOROUS ANALYSES OF WHOLE-SLIDE, MULTIMARKER DATA (BARNETT ET AL., AMERICAN JOURNAL OF PATHOLOGY 189(7): 1402-1412). THE STEENSMA LAB COAUTHORED A STUDY SHOWING THAT THE KRAS G13D MUTATION OF THE RAS GTPASE ENZYME APPEARS IN 25% OF KRAS-DRIVEN COLORECTAL CANCERS, BUT THAT MUTATION IS FOUND ONLY RARELY IN HRAS OR NRAS FORMS. THE KRAS G13D DESTABILIZES THE ENZYME'S NUCLEOTIDE-BINDING POCKET. THESE RESULTS IN PART EXPLAIN THE HIGHER FREQUENCY OF THE G13D MUTANT IN KRAS OVER THE OTHER ISOFORMS OF RAS (JOHNSON ET AL., CELL REPORTS 28(6): 1538-1550.E7). THE KRAWCZYK LAB PUBLISHED A REVIEW OF THE CURRENT UNDERSTANDING OF EPIGENETIC REGULATION OF DENDRITIC CELL FUNCTION. DENDRITIC CELLS ARE A KEY PART OF THE INNATE IMMUNE SYSTEM, AND EPIGENETIC MECHANISMS CONTRIBUTE TO THE HEALTH OF DENDRITIC CELLS AND ARE IMPORTANT FOR THEIR PRECISE RESPONSE TO STIMULI. ENVIRONMENTAL FACTORS SUCH AS CHEMICALS, NUTRIENTS, AND AGING HAVE EFFECTS ON THE EPIGENOME OF DENDRITIC CELLS AND SO AFFECT THE REGULATION OF HOST IMMUNITY (BOUKHALED ET AL., FRONTIERS IN IMMUNOLOGY 10: 1119). RUSSELL JONES' LAB COAUTHORED A PAPER REPORTING ON A CONNECTION BETWEEN THE METABOLIC ACTIVITY OF IMMUNE CELLS AND DISEASE. THEY MEASURED GLYCOLYSIS AND OXYGEN CONSUMPTION RATE IN B CELLS FROM PATIENTS WHO HAD A PRIMARY ANTIBODY DEFICIENCY. THE HIGHEST OXYGEN CONSUMPTION WAS FOUND IN THREE PATIENTS WHO HAD PERSISTENT POLYCLONAL B CELL LYMPHOCYTOSIS. THE STUDY FOUND THAT MUTATIONS IN THE SDHA GENE ACTIVATED A PATHWAY THAT ENDED WITH PRODUCTION OF INFLAMMATORY CYTOKINES AND THAT BLOCKING IL-6 COULD PREVENT SYSTEMIC INFLAMMATION AND LESSEN CLINICAL DISEASE (BURGENER ET AL., NATURE IMMUNOLOGY 20(10): 1311-1321).</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B	<p>LINE 4B - PROGRAM SERVICE ACTIVITY #2 CENTER FOR EPIGENETICS THE CENTER, ESTABLISHED IN 2014 AND DIRECTED BY ANDREW POSPISILIK, PH.D., COMPRISES 11 LABORATORIES STUDYING EPIGENETIC S, EPIGENOMICS, AND THE ROLE OF EPIGENETIC DYSFUNCTION IN CANCER, NEURODEGENERATIVE DISEASE, CARDIOVASCULAR DISEASE, AND VIRAL TRANSCRIPTION. NEW GRANT AWARDS IN THIS FISCAL YEAR FOR CENTER RESEARCHERS AND TRAINEES INCLUDED TWO R01S AND AN R50 FROM THE NATIONAL INSTITUTES OF HEALTH, AS WELL AS A POSTDOCTORAL F32 AND A PRE-DOCTORAL FELLOWSHIP. TWO NIH GRANTS SUB-AWARDS WERE ALSO RECEIVED. THE VAN ANDEL INSTITUTE-STAND UP TO CANCER EPIGENETICS DREAM TEAM, LED BY PETER JONES AND STEPHEN BAYLIN, CONTINUED IN 2019 WITH ITS AIMS OF DEVELOPING NEW COMBINATION THERAPIES TO COMBAT CANCER AND MOVING PROMISING THERAPIES INTO CLINICAL TRIALS. THE TEAM FOCUSES ON EPIGENETIC MECHANISMS IN CELLS, WHICH HELP CONTROL WHETHER GENES ARE TURNED ON OR OFF WITHOUT CHANGING THE DNA SEQUENCE ITSELF. THIS IS DONE PRIMARILY BY THE ADDITION OR REMOVAL OF METHYL GROUPS TO THE DNA OR ADDITION/REMOVAL OF METHYL OR ACETYL GROUPS FROM THE HISTONE PROTEINS AROUND WHICH THE DNA WRAPS. THE ROTHBART LAB REPORTED THAT THE UHRF1 PROTEIN FUNCTIONS AS A CHROMATIN READER TO MAINTAIN CANCER-SPECIFIC DNA METHYLATION IN HUMAN COLORECTAL CANCER CELLS. DISRUPTING THAT ACTIVITY REVERSES DNA HYPERMETHYLATION, REACTIVATES EPIGENETICALLY SILENCED TUMOR SUPPRESSOR GENES, AND REDUCES CANCER CELL ONCOGENIC PROPERTIES. THIS RESULT SUGGESTS THE TARGETING OF THIS PROTEIN MAY BE RELEVANT IN DEVELOPING THERAPEUTIC AGENTS THAT DEMETHYLATE DNA (KONG ET AL., CANCER CELL 35(4): 633-648). THE LAB ALSO DEVELOPED A HIGH-THROUGHPUT PROTEOMICS PLATFORM THAT MAPS THE SELECTIVITY OF THE LYSINE METHYLTRANSFERASE ENZYME WITHOUT NEEDING PRIOR KNOWLEDGE OF A SUBSTRATE OR TARGET PROTEOME. THE STUDY DEMONSTRATED THE PREDICTIVE POWER OF THIS PLATFORM AND ITS USEFULNESS FOR GUIDING THE STUDY OF LYSINE METHYLATION SIGNALING (CORNETT ET AL., SCIENCE ADVANCES 4(11): EAAV2623). IN ANOTHER PAPER, THE SRA FINGER LOOP WAS IDENTIFIED AS A REGULATOR OF UHRF1 UBIQUITIN TARGETING AND OF THE MAINTENANCE OF DNA METHYLATION. THESE RESULTS PROVIDE INSIGHT INTO THE REGULATION OF UHRF1 E3 LIGASE ACTIVITY, SUGGESTING THAT ITS SRA FINGER LOOP REGULATES ITS CONFORMATION AND FUNCTION (VAUGHAN ET AL., JOURNAL OF BIOLOGICAL CHEMISTRY 294(43): 15724-15732). PETER JONES' LAB PUBLISHED A STUDY ON CORRECTING THE VITAMIN C DEFICIENCY OF MYELOID CANCER PATIENTS. ORAL SUPPLEMENTATION LED TO AN INCREASE IN THE 5HMC/5MC RATIO RELATIVE TO PLACEBO-TREATED PATIENTS AND MAY ENHANCE THE EFFECTS OF INHIBITORS (DNMTI'S) OF METHYLTRANSFERASE ENZYMES. THE CLINICAL VALUE OF ORAL VITAMIN C SUPPLEMENTATION TO DNMTI THERAPY SHOULD BE STUDIED IN A LARGE, RANDOMIZED, PLACEBO-CONTROLLED TRIAL (GILLBERG ET AL., CLINICAL EPIGENETICS 11: 143). ANOTHER STUDY LINKED THE FREQUENCY OF IMPRINTING OF THE NC886 DIFFERENTIALLY METHYLATED REGION (DMR) IN INFANTS TO THE MOTHER'S AGE AT DELIVERY AND TO THE</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B	<p>SEASON OF CONCEPTION. BASED ON THE RESULTS, THEY PROPOSE THAT THE IMPRINTING OF THIS DMR IS "TUNABLE" IN BEING ASSOCIATED WITH MATERNAL HAPLOTYPE AND PRENATAL ENVIRONMENT, PROVIDING A POSSIBLE MECHANISM FOR TRANSMITTING INFORMATION FROM MOTHER TO CHILD (CARPENTER ET AL., PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U.S.A. 115(51): E11970-E11977). THE LAB ALSO PUBLISHED A REVIEW OF EPIGENETIC THERAPY IN IMMUNO-ONCOLOGY. INHIBITORS OF DNA METHYLATION HAVE BECOME A MAINSTAY TREATMENT FOR BLOOD CANCERS. SUCH INHIBITORS CAUSE CELLS TO MOUNT AN INNATE IMMUNE RESPONSE, AND OTHER EPIGENETIC INHIBITORS CAN PRODUCE SIMILAR EFFECTS. THESE DEVELOPMENTS OPEN NEW AVENUES FOR THE TREATMENT OF CANCERS (JONES ET AL., NATURE REVIEWS CANCER 19: 151-161). THE PFEIFER LAB QUANTIFIED DNA CYTOSINE MODIFICATIONS IN DIFFERENTIATING NEURONS ISOLATED FROM MOUSE BRAIN AT THE PEAK OF EMBRYONIC NEUROGENESIS. LOCAL DNA REGIONS HAVING LITTLE METHYLATION (HYPOMETHYLATION) WERE MUCH MORE COMMON THAN HYPERMETHYLATION. THE HYPOMETHYLATED REGIONS STRONGLY OVERLAPPED WITH THE BINDING SITES OF THE KEY NEURONAL TRANSCRIPTION FACTOR NEUROD2. THESE DATA SUGGEST A CRUCIAL ROLE FOR NEUROD2 DURING NEURON DEVELOPMENT, AND THE STUDY IS A STEP TOWARD AN EFFECTIVE APPROACH TO CONVERTING OTHER CELL TYPES INTO NEURONS FOR USE IN REGENERATIVE MEDICINE (HAHN ET AL., SCIENCE ADVANCES 5(10): EAAX0080). THE PFEIFER AND SZABO LABS PUBLISHED A STUDY IN WHICH THE CATALYTIC DOMAIN OF EITHER THE EHMT2 OR THE SETDB1 METHYLTRANSFERASE ENZYME WAS DELETED IN GROWING OOCYTES. THE DELETIONS SIGNIFICANTLY REDUCED H3K9ME2 OR H3K9ME3, RESPECTIVELY, IN THE MATERNAL PRONUCLEUS. THE ASYMMETRY OF GLOBAL 5MC OXIDATION WAS SIGNIFICANTLY LESS IN THE ZYGOTES HAVING MATERNAL MUTATION IN EHMT2 OR SETD1. THESE ENZYMES SEEM TO HAVE ROLES IN THE STRUCTURAL ASPECTS OF ZYGOTE DEVELOPMENT (ZENG ET AL., PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U.S.A. 116(22): 10834-10841). A STUDY FROM THE JOVINGE LAB ON GENE EXPRESSION ANALYSIS REVEALED THAT THE MOLECULAR BEACON (MB)-POSITIVE CARDIOMYOCYTE SUBPOPULATION HAD PATTERNS CONSISTENT WITH NUCLEAR DIVISION, CHROMOSOME SEGREGATION, AND M-G1 TRANSITION. DUAL MBS TARGETING THE CDC20 AND SPG20 MRNAS ALLOWED THE IDENTIFICATION OF CYTOKINETIC EVENTS SUCH AS CDC20(HIGH)SPG20(HIGH). THIS WORK PROVIDES AN ALTERNATIVE APPROACH FOR SORTING CARDIOMYOCYTES THAT HAVE TRUE MITOTIC POTENTIAL (MILLIRON ET AL., CIRCULATION RESEARCH 125(12): 1070-1086). THE LAB ALSO EVALUATED THE SAFETY OF CROSS-SPECIES SENDAI VIRAL REPROGRAMMING OF INDUCED PLURIPOTENT STEM CELLS, AND THEY STUDIED THE DYNAMICS OF DNA TRANSCRIPTION DURING REPROGRAMMING AND DIFFERENTIATION. THIS STUDY DEMONSTRATED THE SUCCESSFUL USE OF A CLINICALLY RELEVANT METHOD TO REPROGRAM DIFFERENTIATED MOUSE CELLS AND THEIR POTENTIAL FOR GENERATING SPECIALIZED TYPES OF CARDIAC CELLS (TARNAWSKI ET AL., CELLULAR REPROGRAMMING 2(2): 78-88). A THIRD PROJECT ANALYZED CARDIAC CELLS FROM EARLY-STAGE DEVELOPING HEARTS BY USING SINGLE-CELL RNA SEQUENC</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B	<p>ING. THE DATA SHOWED HOW VARIATIONS IN CELL CYCLE ACTIVITY SELECTIVELY PROMOTE CARDIAC CHAMBER GROWTH DURING DEVELOPMENT; REVEALED CHAMBER-SPECIFIC, CELL CYCLE-LINKED TRANSCRIPTIONAL SHIFTS; AND OPEN THE WAY TO A DEEPER UNDERSTANDING OF THE ORIGINS OF CONGENITAL HEART DISEASE (LI ET AL, DEVELOPMENT 146(12): DEV173476). THE SHEN AND LAIRD LABS JOINTLY PRODUCED A SYSTEMATIC ANALYSIS OF THE EFFECTS OF SYNCHRONIZING A LARGE-SCALE, DEEPLY CHARACTERIZED, MULTI-OMIC DATA SET TO THE CURRENT HUMAN REFERENCE GENOME. THE HG19 AND HG38 CANCER GENOME ATLAS DATA SETS ARE VERY HIGHLY CONCORDANT AND PROVIDE A RUBRIC THAT ENCOURAGES SIMILAR COMPARISONS AS NEW DATA EMERGE AND AS THE REFERENCE DATA EVOLVE (GAO ET AL., CELL SYSTEMS 9(1): 24-34.E10). THEY ALSO PUBLISHED A STUDY USING DNA METHYLATION PROFILING TO DIFFERENTIATE MALIGNANT LUNG TUMORS FROM BENIGN SOLITARY PULMONARY NODULES, WHICH REQUIRES BETTER NON-INVASIVE DIAGNOSTIC TOOLS. THE RESEARCH RESULTED IN A SENSITIVE, BLOOD-BASED, NON-INVASIVE DIAGNOSTIC ASSAY FOR DETECTING EARLY-STAGE LUNG CANCER AND FOR DIFFERENTIATING LUNG CANCERS FROM BENIGN PULMONARY NODULES (LIANG ET AL., THERANOSTICS 9(7): 2056-2070). THE LAIRD LAB PRODUCED A VIDEO SHOWING HOW BOTH TIGHT REPRESSION AND ROBUST UP-REGULATION ARE POSSIBLE THROUGH REVERSIBLE, TUNABLE REMOTE-CONTROL SYSTEM THEY DEVELOPED, WHICH CAN BE APPLIED AND WITHDRAWN REPEATEDLY IN ORGANISMS. THE SYSTEM USES ENHANCED LAC REPRESSION AND TET ACTIVATION SYSTEMS TO MANIPULATE A TARGET GENE WITHIN A BIOLOGICAL SYSTEM (VANDER SCHAAP ET AL., JOURNAL OF VISUALIZED EXPERIMENTS 145). THE SHEN LAB COLLABORATED IN A STUDY OF ARID1A, A PROTEIN INVOLVED IN CHROMATIN REMODELING AND A FACTOR IN ENDOMETRIAL CANCER. THE AUTHORS PROPOSE THAT ARID1A NORMALLY MAINTAINS ENDOMETRIAL EPITHELIAL CELL IDENTITY AND THAT COEXISTENT ARID1A AND PI3K MUTATIONS PROMOTE EPITHELIAL TRANSDIFFERENTIATION AND COLLECTIVE INVASION. THESE FINDINGS SUPPORT A ROLE FOR COLLECTIVE EPITHELIAL INVASION IN THE SPREAD OF ABNORMAL ENDOMETRIAL TISSUE (WILSON ET AL., NATURE COMMUNICATIONS 10: 3554).</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B (CONT.)	<p>LINE 4B - PROGRAM SERVICE ACTIVITY #2 CENTER FOR EPIGENETICS THE TRICHE LAB TOOK PART IN SEVERAL PROJECTS, TWO FOCUSING ON CANCER RESEARCH. ONE WAS A STUDY OF MITOCHONDRIAL DNA MUTATIONS IN PEDIATRIC CANCERS. THE RESEARCH IDENTIFIED 391 MITOCHONDRIAL DNA MUTATIONS IN 284 TUMORS, INCLUDING 45 LOSS-OF-FUNCTION MUTATIONS THAT CLUSTERED AT FOUR HOTSPOTS IN THE MT-COX3, MT-ND4, AND MT-ND5 GENES. THESE RESULTS SUGGEST THAT MITOCHONDRIAL DNA MUTATIONS PLAY A ROLE IN THE DEVELOPMENT AND PROGRESSION OF PEDIATRIC CANCERS (TRISKA ET AL., CANCER RESEARCH 79(7): 1318-1330). A SECOND STUDY LOOKED AT DNA METHYLATION IN LONG-TERM SURVIVORS OF ADOLESCENT/YOUNG ADULT HODGKIN LYMPHOMA AND THEIR UNAFFECTED TWINS. EPIGENETIC AGING AS MEASURED BY DNA METHYLATION WAS CALCULATED AND COMPARED BETWEEN THE SURVIVORS AND THE TWIN. DIFFERENCES IN BLOOD EPIGENETIC AGE WERE OBSERVED, ESPECIALLY IN FEMALES. SURVIVORS AND THEIR TWINS HAD 74 DIFFERENTIALLY METHYLATED LOCI IN BLOOD DNA, WHICH SUGGESTS PERSISTENT EPIGENETIC AGING IN THE SURVIVORS LONG AFTER THE HODGKIN LYMPHOMA WAS CURED (WANG ET AL., LEUKEMIA AND LYMPHOMA 60(6): 1429-1437). SENESCENCE, A STATE OF PERMANENT CELL CYCLE ARREST, IS NOW RECOGNIZED TO OCCUR IN STEM CELLS. IN A THIRD PAPER COAUTHORED BY THE TRICHE LAB, WHOLE-GENOME DNA SEQUENCING WAS DONE ON PAIRED SENESCENT AND ACTIVE HUMAN HEMATOPOIETIC STEM CELLS FROM HEALTHY SUBJECTS. SENESCENT CELLS HAD HYPOMETHYLATED REGIONS IN THE GENOME THAT HAD MORE TRANSPOSABLE ELEMENTS. THIS IS THE FIRST STUDY THAT CHARACTERIZES THE DNA METHYLATION PATTERNS OF SENESCENT HUMAN HSPCS (CAPONE ET AL., EXPERIMENTAL HEMATOLOGY AND ONCOLOGY 7: 32). AMONG SEVERAL PAPERS COAUTHORED BY XIAOBING SHI'S LAB, ONE STUDIED THE INTERPLAY BETWEEN THE ARGININE METHYLTRANSFERASES PRMT5 AND PRMT1, WHICH ADD A METHYL GROUP TO CERTAIN PROTEINS. THEY FOUND THAT A COMBINATION OF INHIBITORS AGAINST PRMT5 AND PRMT1 HAD A BENEFICIAL EFFECT ON SMALL-CELL LUNG CANCER AND PANCREATIC CANCER CELL MODELS. THE RESULTS SHOW A REDUNDANCY BETWEEN THE PRMT5 AND PRMT1 PATHWAYS; TARGETING THIS REDUNDANCY MAY BE EFFECTIVE AGAINST CERTAIN TUMORS (GAO ET AL., NUCLEIC ACIDS RESEARCH 47(10): 5038-5048). ANOTHER PAPER, IN COLLABORATION WITH THE ROTHBART LAB AND OTHERS, IDENTIFIED THE PHD6 FINGER OF THE HISTONE METHYLTRANSFERASE ENZYME MLL4 AS SELECTIVELY RECOGNIZING THE H4K16AC MODIFICATION OF HISTONE PROTEINS. THIS FUNCTION OF MLL4 HAD NOT PREVIOUSLY BEEN KNOWN, AND IT SUGGESTS THAT THE TARGETING OF H4K16AC BY MLL4 DIRECTLY LINKS THE MLL4 AND MOF ENZYMES WITH H4K16 ACETYLATION (ZHANG ET AL., NATURE COMMUNICATIONS 10: 2314). A THIRD PROJECT INVESTIGATED THE ACETYLATION OF HISTONE H3K23, WHICH IS AN ESSENTIAL MODIFICATION ASSOCIATED WITH CANCER AND LEARNING/MEMORY IMPAIRMENT. THIS STUDY IDENTIFIED THE MORF COMPLEX AS AN ACETYLTRANSFERASE ENZYME AND DETERMINED ITS MECHANISM OF ACTION, WHICH INVOLVES THE MORF, ACYLATED H3K14, AND H3K23 PROTEINS, TO ACTIVATE DNA TRANSCRIPTION (KLEIN ET AL., NATURE COMMUNICATIONS 10: 4724).</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4C	<p>LINE 4C - PROGRAM SERVICE ACTIVITY #3 CENTER FOR NEURODEGENERATIVE SCIENCE THE CENTER WAS ESTABLISHED IN 2012 UNDER PATRIK BRUNDIN, M.D., PH.D., WHO IS ALSO ASSOCIATE DIRECTOR OF VARI. IN 2019, IT HAD NINE LABORATORIES STUDYING PARKINSON'S DISEASE, ALZHEIMER'S DISEASE, PRIONS, AND THE RELATIONSHIPS BETWEEN DEPRESSION, SUICIDE, AND BRAIN INFLAMMATION. THE NEW EST LABORATORY, THAT OF HONG-YUAN CHU, PH.D., FOCUSES ON NEURAL CIRCUITS AND NEURODEGENERATION. CENTER RESEARCHERS AND TRAINEES DURING THIS FISCAL YEAR RECEIVED TWO R01S, TWO R21S, AND A U01 GRANT FROM THE NATIONAL INSTITUTES OF HEALTH, AND AWARDS FROM THE FARMER FAMILY FOUNDATION, THE MICHAEL J. FOX FOUNDATION, AND THE CREUTZFELDT-JAKOB DISEASE FOUNDATION. A POSTDOCTORAL FELLOWSHIP WAS RECEIVED FROM THE AMERICAN PARKINSON DISEASE ASSOCIATION, AND TWO NEW RESEARCH CONTRACTS WERE SIGNED. THE COETZEE LAB PUBLISHED A STUDY OF 19 (OF 142) BREAST CANCER GENE RISK LOCI THAT ARE LIKELY TO FUNCTION IN THE MCF-7 BREAST CANCER CELL LINE AND ARE SUITED FOR TARGETED MANIPULATION. HOWEVER, THE RISK LOCI CANNOT BE MAPPED TO SPECIFIC CTCF BINDING SITES, AND THE GENES LINKED TO RISK SITES DID NOT SHOW FUNCTIONAL ENRICHMENT. THE IDENTITY OF THESE RISK ENHANCERS AND THEIR ASSOCIATED GENES SUGGESTS THAT SOME RISK MAY FUNCTION DURING LATER STAGES OF CANCER PROGRESSION (BOOMS ET AL., CANCER EPIDEMIOLOGY, BIOMARKERS AND PREVENTION 28(10): 1735-1745). THE LAB ALSO PUBLISHED A FUNCTIONAL ANALYSIS AND FINE MAPPING OF THE 9P22.2 CHROMOSOME AND ITS RELATIONSHIP TO AN OVARIAN CANCER SUSCEPTIBILITY LOCUS. THE BNC2 GENE WAS ESTABLISHED AS THE MOST LIKELY TARGET GENE. THE STUDY UNCOVERED A COMPREHENSIVE REGULATORY LANDSCAPE AT 9P22.2 AND SUGGESTS A LIKELY MECHANISM FOR AN INDIVIDUAL'S SUSCEPTIBILITY TO OVARIAN CANCER (BUCKLEY ET AL., CANCER RESEARCH 79(3): 467-481). THE PATRIK BRUNDIN AND THE MA LABS STUDIED THE "ENGRAILED1" GENE AND ITS EFFECT ON ALPHA-SYNUCLEIN AGGREGATION IN NEURONS. EN1(+/-) MICE INJECTED WITH SYNUCLEIN FIBRILS HAD A NEARLY THREEFOLD INCREASE IN SYNUCLEIN-POSITIVE NEURONS IN THE SUBSTANTIA NIGRA. THEY ALSO SHOWED SIGNIFICANT INCREASES IN THE AMYGDALA AND VENTRAL TEGMENTAL AREA AND MORE AGGREGATION IN SEVERAL CORTICAL REGIONS. THIS STUDY IS ANOTHER STEP IN DEFINING THE GENES THAT CAUSE PARKINSON'S DISEASE. (CHATTERJEE ET AL., JOURNAL OF PARKINSON'S DISEASE 9(2): 315-326). A STUDY BY THE PATRIK BRUNDIN LAB FOUND THAT THE ABSENCE OR THE HYPERSTIMULATION OF MICROGLIAL CELLS AFFECTED ALPHA-SYNUCLEIN TRANSFER IN THE MOUSE BRAIN. THE RESULTS SUGGEST THAT UNDER RESTING, NONINFLAMMATORY CONDITIONS, MICROGLIA MODULATE THE TRANSFER OF ALPHA-SYN AND THAT DRUGS WHICH REGULATE NEUROINFLAMMATION COULD BE A WAY TO LIMIT THE SPREAD OF PARKINSON'S DISEASE PATHOLOGY (GEORGE ET AL., MOLECULAR NEURODEGENERATION 14: 34). THE LABRIE LAB STUDIED 1.2 MILLION CPG AND CPH SITES IN ENHANCERS WITHIN PREFRONTAL CORTEX NEURONS AND IDENTIFIED 1224 DIFFERENTIALLY METHYLATED ENHANCER REGIONS. CPH METHYLATION LOSS, WHICH IS NORMAL IN AGI</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4C	<p>NG NEURONS, IS ACCELERATED IN ALZHEIMER'S DISEASE. THEY ALSO FOUND THAT NEURONS IN ALZHEIMER'S DISEASE HAVE A LARGE CLUSTER OF SIGNIFICANTLY HYPOMETHYLATED ENHANCERS IN THE DSCAML1 GENE (LI ET AL., NATURE COMMUNICATIONS 10: 2246). IN ANOTHER PROJECT, THE LAB STUDIED THE DISRUPTION OF CIRCADIAN RHYTHMS, WHICH MAY INCREASE RISK FOR MALIGNANT, PSYCHIATRIC, METABOLIC, AND OTHER DISEASES. THIS STUDY SHOWED THAT OSCILLATING CYTOSINE MODIFICATIONS (OSC-MODCS) ARE FOUND IN HUMAN NEUTROPHILS, THAT THEY MAY PLAY A ROLE IN GENE REGULATION, AND THAT THEY ARE LINKED TO COMPLEX DISEASES SUCH AS CANCER. OSC-MODCS CAN ALSO EXPLAIN PARTS OF EPIGENETIC VARIATION ARE SIGNATURES OF AGING (OH ET AL., GENOME BIOLOGY 20(1): 2). THE LABRIE AND SZAB LABS COLLABORATED ON A STUDY OF NEURONS ISOLATED FROM THE PREFRONTAL CORTEX OF PATIENTS HAVING SCHIZOPHRENIA OR BIPOLAR DISORDER. PROMINENT HYPOMETHYLATION OF AN ENHANCER OF THE IGF2 GENE WAS FOUND IN NEURONS. THAT ENHANCER TARGETS THE NEARBY TYROSINE HYDROXYLASE GENE, WHICH IS RESPONSIBLE FOR DOPAMINE SYNTHESIS. THE DATA SUGGEST THAT HYPOMETHYLATION ACTIVATES THE ENHANCER AT IGF2, WHICH MAY INCREASE THE DOPAMINE SYNTHESIS THAT IS ASSOCIATED WITH MAJOR PSYCHOSIS (PAI ET AL., NATURE COMMUNICATIONS 10: 2046). THE MOORE AND MA LABS PUBLISHED RESEARCH SHOWING THAT, UNLIKE PHYSIOLOGICAL ALPHA-SYNUCLEIN, DISEASE-CAUSING FORMS OF SYNUCLEIN AGGREGATES PREFERENTIALLY BIND TO MITOCHONDRIA AND AFFECT CELLULAR RESPIRATION. THIS INDICATES THAT MITOCHONDRIAL DYSFUNCTION HAS A ROLE IN ALPHA-SYNUCLEIN-RELATED DISEASES, AND IT ALSO SUGGESTS AN EXPLANATION OF THE FORMATION AND THE PECULIAR MORPHOLOGY OF LEWY BODIES (WANG ET AL., ACTA NEUROPATHOLOGICA COMMUNICATIONS 7: 41). THE MOORE, LABRIE, AND MA LABS USED A KNOCK-IN MOUSE MODEL TO SHOW THE AGE-RELATED PATHOGENIC EFFECTS OF A MUTATION IN THE VPS35 GENE IN PARKINSON'S DISEASE. THAT MODEL REPRODUCED KEY NEUROPATHOLOGICAL HALLMARKS OF PD, INCLUDING PROGRESSIVE DEGENERATION OF NIGROSTRIATAL DOPAMINERGIC NEURONS AND WIDESPREAD AXON PATHOLOGY. UNEXPECTEDLY, ENDOGENOUS D620N VPS35 EXPRESSION ALSO PRODUCED STRONG, TAU-POSITIVE, SOMATODENDRITIC PATHOLOGY THROUGHOUT THE BRAIN, WHICH RAISES THE POSSIBILITY OF INTERPLAY BETWEEN MUTANT VPS35 AND TAU IN PARKINSON'S DISEASE NEURODEGENERATION (CHEN ET AL., PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U.S.A. 116(12): 5765-5774). THE MOORE LABORATORY ALSO CONTRIBUTED TO A STUDY OF RAT MODELS OF PARKINSON'S DISEASE IN ORDER TO OPTIMIZE ALPHA-SYNUCLEIN ACCUMULATION AND NIGROSTRIATAL DEGENERATION AND TO UNDERSTAND THE TIME COURSE OF BOTH PROCESSES. THE FINDINGS CAN HELP DEVELOP A REPRODUCIBLE SYNUCLEINOPATHY MODEL IN RATS THAT WOULD BE VALUABLE FOR STUDYING PATHOGENIC MECHANISMS OF PARKINSON'S DISEASE AND DISEASE-MODIFYING THERAPIES (PATTERSON ET AL., NEUROBIOLOGY OF DISEASE 130: 104525). THE LENA BRUNDIN LAB ASSAYED TRYPTOPHAN AND METABOLITE LEVELS AND THE EXPRESSION OF KYNURENINE PATHWAY ENZYMES IN PLACENTAL TISSUE FROM WOMEN WITH AND WITHOUT PRE-ECLAMPSIA. TR</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4C	<p>YPTOPHAN AND THE INFLAMMATORY MEDIATOR SAA WERE BOTH REDUCED IN PLACENTAS FROM WOMEN WITH PRE-ECLAMPSIA. THERE WAS ALSO AN INCREASED KYNURENINE/TRYPHTOPHAN RATIO, BUT NO SIGNIFICANT CHANGE IN DOWNSTREAM METABOLITES (KEATON ET AL., INTERNATIONAL JOURNAL OF TRYPTOPHAN RESE ARCH 12). ANOTHER STUDY MEASURED 45 IMMUNOBIOLOGICAL FACTORS IN PERIPHERAL BLOOD AND SHOWE D THAT THE PROFILE OF PATIENTS AT INCREASED RISK OF SUICIDE DIFFERED FROM THE PROFILE ASSO CIATED WITH DEPRESSION. INCREASED INTERLEUKIN-6 AND HIGHER NUMBERS OF LYMPHOCYTES, MONOCYT ES, WHITE BLOOD CELLS, AND POLYMORPHONUCLEAR LEUKOCYTES SIGNIFICANTLY AFFECTED SUICIDE RIS K; THE LAST TWO HAD THE STRONGEST INFLUENCE. INTERLEUKIN-8 WAS INDEPENDENTLY AND NEGATIVEL Y ASSOCIATED WITH INCREASED SUICIDE RISK. THE SUICIDE RISK PROFILE INDICATED THAT GRANULOC YTE-MEDIATED BIOLOGICAL MECHANISMS COULD BE ACTIVATED IN THOSE PATIENTS (KEATON ET AL., JO URNAL OF AFFECTIVE DISORDERS 247: 57-65). THE LAB ALSO COLLABORATED ON A THIRD PAPER STUDY ING BLOOD LEVELS OF INTERLEUKIN-6 (IL-6), 2-ARACHIDONOYLGLYCEROL (2-AG), AND PICOLINIC ACI D (PIC) IN PERSONS HAVING A HISTORY OF MOOD, ANXIETY, OR PERSONALITY DISORDERS AND IN CONT ROL SUBJECTS. THE STUDY SHOWED SIGNIFICANT ASSOCIATIONS BETWEEN IL-6 LEVEL AND PLASMA 2-AG AND PIC ACROSS ALL SUBJECTS. THE DATA PROVIDE EVIDENCE OF INTERPLAY BETWEEN THESE MOLECUL ES AND SUGGEST THAT THESE FACTORS INFLUENCE PERSONALITY TRAITS (HEILMAN ET AL., PSYCHONEUR OENDOCRINOLOGY 110: 104434). THE GUERREIRO AND BRAS LABS PUBLISHED A STUDY OF A SEVERE, AD ULT-ONSET, FAMILIAL DEGENERATIVE BRAIN DISEASE KNOWN AS HDLS-S. THEIR RECENT ASSESSMENT OF SEVERAL FAMILY MEMBERS AND DNA SEQUENCING ANALYSES SHOWED THAT THE P.CYS152PHE VARIANT IN THE AARS (ALANYL TRNA SYNTHETASE) GENE IS THE PROBABLE CAUSE OF THIS DISEASE. THE STUDY I DENTIFIES AARS AS A TARGET FOR RESEARCH INTO DEVELOPING A THERAPY FOR THIS DISEASE (SUNDAL ET AL., ACTA NEUROPATHOLOGICA COMMUNICATIONS 7: 188).</p>

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART IX, COLUMN D	FUNDRAISING EXPENSES AT VARI WERE INCURRED TO SUPPORT THE MISSION OF THE RESEARCH INSTITUTE THROUGH DONOR SOLICITATION, GRANT SOLICITATION AND EXTRAMURAL PROPOSAL PREPARATION.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART X, LINE 33	VARI NET ASSETS ARE CONSIDERED ON A CONSOLIDATED BASIS WITH VAN ANDEL INSTITUTE (VAI)AND VAN ANDEL EDUCATION INSTITUTE (VAEI). ON A CONSOLIDATED BASIS, NET ASSETS ARE \$1,576,560,000 PER AUDITED FINANCIAL STATEMENTS. THE NEGATIVE NET ASSET BALANCE AT VARI IS DUE TO VAI FUNDING EXPENSES ON A CASH BASIS AND THE UNREALIZED LOSS RECORDED IN ASSOCIATION WITH THE INTEREST RATE SWAP.

SCHEDULE R
(Form 990)

Department of the Treasury
Internal Revenue Service

Related Organizations and Unrelated Partnerships

► Complete if the organization answered "Yes" on Form 990, Part IV, line 33, 34, 35b, 36, or 37.
► Attach to Form 990.
► Go to www.irs.gov/Form990 for instructions and the latest information.

OMB No. 1545-0047

2018

Open to Public Inspection

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I Identification of Disregarded Entities Complete if the organization answered "Yes" on Form 990, Part IV, line 33.					
(a) Name, address, and EIN (if applicable) of disregarded entity	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Total income	(e) End-of-year assets	(f) Direct controlling entity
(1) VAI INNOVATIONS LLC 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000823	LICENSING INTELLECTUAL PROPERTY OF VARI	MI	0	0	VAN ANDEL RESEARCH INSTITUTE
(2) BOSTWICK EVENT MANAGEMENT 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000823	EVENT MANAGEMENT	MI	34,867	118,738	VAN ANDEL RESEARCH INSTITUTE

Part II Identification of Related Tax-Exempt Organizations Complete if the organization answered "Yes" on Form 990, Part IV, line 34 because it had one or more related tax-exempt organizations during the tax year.							
(a) Name, address, and EIN of related organization	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Exempt Code section	(e) Public charity status (if section 501(c)(3))	(f) Direct controlling entity	(g) Section 512(b)(13) controlled entity?	
						Yes	No
(1) VAN ANDEL INSTITUTE 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000820	SUPPORTING ORGANIZATION FOR VARI AND VAEI	MI	501(C)(3)	12C	N/A		No
(2) VAN ANDEL EDUCATION INSTITUTE 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000824	OPERATING A SCIENCE EDUCATION PROGRAM	MI	501(C)(3)	2	VAN ANDEL INSTITUTE	Yes	
(3) VAN ANDEL INSTITUTE GRADUATE SCHOOL 333 BOSTWICK AVENUE NE GRAND RAPIDS, ME 495032518 20-3340886	OPERATING A GRADUATE SCHOOL	MI	501(C)(3)	2	VAN ANDEL EDUCATION INSTITUTE	Yes	

Part III Identification of Related Organizations Taxable as a Partnership Complete if the organization answered "Yes" on Form 990, Part IV, line 34 because it had one or more related organizations treated as a partnership during the tax year.

(a) Name, address, and EIN of related organization	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Direct controlling entity	(e) Predominant income(related, unrelated, excluded from tax under sections 512- 514)	(f) Share of total income	(g) Share of end-of-year assets	(h) Disproportionate allocations?		(i) Code V-UBI amount in box 20 of Schedule K-1 (Form 1065)	(j) General or managing partner?		(k) Percentage ownership
							Yes	No		Yes	No	

Part IV Identification of Related Organizations Taxable as a Corporation or Trust Complete if the organization answered "Yes" on Form 990, Part IV, line 34 because it had one or more related organizations treated as a corporation or trust during the tax year.

(a) Name, address, and EIN of related organization	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Direct controlling entity	(e) Type of entity (C corp, S corp, or trust)	(f) Share of total income	(g) Share of end-of- year assets	(h) Percentage ownership	(i) Section 512(b) (13) controlled entity?	
								Yes	No

Part V

Transactions With Related Organizations

Complete if the organization answered "Yes" on Form 990, Part IV, line 34, 35b, or 36.

Note. Complete line 1 if any entity is listed in Parts II, III, or IV of this schedule.

1

During the tax year, did the organization engage in any of the following transactions with one or more related organizations listed in Parts II-IV?

a

Receipt of (i) interest, (ii) annuities, (iii) royalties, or (iv) rent from a controlled entity

1a

No

b

Gift, grant, or capital contribution to related organization(s)

1b

No

c

Gift, grant, or capital contribution from related organization(s)

1c

Yes

d

Loans or loan guarantees to or for related organization(s)

1d

No

e

Loans or loan guarantees by related organization(s)

1e

Yes

f

Dividends from related organization(s)

1f

No

g

Sale of assets to related organization(s)

1g

No

h

Purchase of assets from related organization(s)

1h

No

i

Exchange of assets with related organization(s)

1i

No

j

Lease of facilities, equipment, or other assets to related organization(s)

1j

No

k

Lease of facilities, equipment, or other assets from related organization(s)

1k

No

l

Performance of services or membership or fundraising solicitations for related organization(s)

1l

No

m

Performance of services or membership or fundraising solicitations by related organization(s)

1m

No

n

Sharing of facilities, equipment, mailing lists, or other assets with related organization(s)

1n

Yes

o

Sharing of paid employees with related organization(s)

1o

Yes

p

Reimbursement paid to related organization(s) for expenses

1p

Yes

q

Reimbursement paid by related organization(s) for expenses

1q

Yes

r

Other transfer of cash or property to related organization(s)

1r

No

s

Other transfer of cash or property from related organization(s)

1s

No

2 If the answer to any of the above is "Yes," see the instructions for information on who must complete this line, including covered relationships and transaction thresholds.

See Additional Data Table

(a) Name of related organization	(b) Transaction type (a-s)	(c) Amount involved	(d) Method of determining amount involved

Provide the following information for each entity taxed as a partnership through which the organization conducted more than five percent of its activities (measured by total assets or gross revenue) that was not a related organization. See instructions regarding exclusion for certain investment partnerships.

[illegible]

Part VII

Supplemental Information

Provide additional information for responses to questions on Schedule R (see instructions).

Return Reference	Explanation

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Form 990, Schedule R, Part V - Transactions With Related Organizations

(a) Name of related organization		(b) Transaction type(a-s)	(c) Amount Involved	(d) Method of determining amount involved
(1)	VAN ANDEL INSTITUTE	C	49,750,429	ACTUAL AMOUNT PAID
(1)	VAN ANDEL INSTITUTE	E	71,320,000	TOTAL RECORDED
(2)	VAN ANDEL INSTITUTE	N	287,419	ALLOCATION BASED ON SQ. FOOTAGE
(3)	VAN ANDEL INSTITUTE	P	1,210,302	ACTUAL AMOUNT PAID
(4)	VAN ANDEL INSTITUTE	N	198,021	ALLOCATION BASED ON EFFORT
(5)	VAN ANDEL INSTITUTE	O	1,132,338	ALLOCATION BASED ON EFFORT
(6)	VAN ANDEL EDUCATION INSTITUTE	P	613,371	ACTUAL AMOUNT PAID
(7)	VAN ANDEL EDUCATION INSTITUTE	Q	1,826,197	ACTUAL AMOUNT RECEIVED
(8)	VAN ANDEL EDUCATION INSTITUTE	N	49,968	ALLOCATION BASED ON EFFORT
(9)	VAN ANDEL EDUCATION INSTITUTE	O	285,730	ALLOCATION BASED ON EFFORT
(10)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	N	24,059	ALLOCATION BASED ON EFFORT
(11)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	N	161,673	ALLOCATION BASED ON SQ. FOOTAGE
(12)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	Q	240,798	ACTUAL AMOUNT RECEIVED
(13)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	O	137,574	ALLOCATION BASED ON EFFORT
(14)	VAN ANDEL INSTITUTE	Q	7,023,320	ACTUAL AMOUNT PAID
(15)	VAN ANDEL INSTITUTE	E	4,137,107	TOTAL RECORDED
(16)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	P	580,000	ACTUAL AMOUNT PAID
(17)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	O	135,811	ALLOCATION BASED ON EFFORT
(18)	VAN ANDEL EDUCATION INSTITUTE	O	135,811	ALLOCATION BASED ON EFFORT
(19)	VAN ANDEL INSTITUTE	O	85,418	ALLOCATION BASED ON EFFORT