

Advanced Accelerator Applications S.A.
Form SC 13D
February 01, 2018

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

SCHEDULE 13D

Under the Securities Exchange Act of 1934

Advanced Accelerator Applications S.A.

(Name of Issuer)

Ordinary shares, par value 0.10 per share (Ordinary Shares)

American Depositary Shares, each of which represents 2 Ordinary Shares, par value 0.10 per share

(Title of Class of Securities)

F0R0DZ103

00790T100**

(CUSIP Number)

Felix R. Ehrat

Group General Counsel

Novartis AG

CH-4056 Basel

Switzerland

Telephone: + 41-61-324-11-11

Copy to:

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George A. Casey

George Karafotias

Shearman & Sterling LLP

599 Lexington Avenue

New York, NY 10022

Telephone: (212) 848-4000

(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

January 22, 2018

(Date of Event Which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of 240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box ☐.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See 240.13d-7(b) for other parties to whom copies are to be sent.

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be filed for the purpose of Section 18 of the Securities Exchange Act of 1934 (" Act ") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

** This CUSIP number is assigned to the subject company's American Depositary Shares, each representing two Ordinary Shares.

SCHEDULE 13D

CUSIP No. 00790T100

1	Names of Reporting Person Novartis Groupe France S.A.	
2	Check the Appropriate Box if a Member of a Group	
	(a)	o
	(b)	o
3	SEC Use Only	
4	Source of Funds (See Instructions) AF, OO	
5	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) o	
6	Citizenship or Place of Organization France	
Number of Shares Beneficially Owned by Each Reporting Person With	7	Sole Voting Power None
	8	Shared Voting Power 95,127,753
	9	Sole Dispositive Power None
	10	Shared Dispositive Power 95,127,753
11	Aggregate Amount Beneficially Owned by Each Reporting Person 95,127,753	
12	Check Box if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) o	
13	Percent of Class Represented by Amount in Row (11) 98.7%*	
14	Type of Reporting Person (See Instructions) CO	

* This calculation is based on 96,406,491 Ordinary Shares (including Ordinary Shares represented by ADSs), nominal value 0.10 per share, of Advanced Accelerator Applications S.A. outstanding as of January 31, 2018.

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CUSIP No. 00790T100

1	Names of Reporting Person Novartis AG	
2	Check the Appropriate Box if a Member of a Group	
	(a)	<input type="radio"/>
	(b)	<input type="radio"/>
3	SEC Use Only	
4	Source of Funds (See Instructions) AF, OO	
5	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="radio"/>	
6	Citizenship or Place of Organization Switzerland	
	7	Sole Voting Power None
Number of Shares Beneficially Owned by Each Reporting Person With	8	Shared Voting Power 95,127,753
	9	Sole Dispositive Power None
	10	Shared Dispositive Power 95,127,753
	11	Aggregate Amount Beneficially Owned by Each Reporting Person 95,127,753
12	Check Box if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) <input type="radio"/>	
13	Percent of Class Represented by Amount in Row (11) 98.7%*	
14	Type of Reporting Person (See Instructions) CO	

* This calculation is based on 96,406,491 Ordinary Shares (including Ordinary Shares represented by ADSs), nominal value 0.10 per share, of Advanced Accelerator Applications S.A. outstanding as of January 31, 2018.

Item 1. Security and Issuer

This Statement on Schedule 13D (this **Schedule 13D**) relates to the ordinary shares, nominal value 0.10 per share (the **Ordinary Shares**), including Ordinary Shares represented by American Depositary Shares (**ADSs**), of Advanced Accelerator Applications S.A. (**AAA**), a *société anonyme* organized under the laws of France with principal offices located at 20 Rue Diesel, 01630 Saint Genis Pouilly, France.

Item 2. Identity and Background

This Schedule 13D is being filed by Novartis AG, a company organized under the laws of Switzerland (**Parent**), and Novartis Groupe France S.A., a *société anonyme* organized under the law of France (**Purchaser**), and together with Parent, the **Reporting Persons**.

Parent's principal address is Lichtstrasse 35, CH-4056 Basel, Switzerland. Parent is the publicly owned parent of a multinational group of companies specializing in the research, development, manufacturing and marketing of a broad range of healthcare products, led by innovative pharmaceuticals.

Purchaser's principal address is 2/4, rue Lionel Terray, 92500 Reuil-Malmaison, France. Purchaser is a direct and indirect wholly-owned subsidiary of Parent, and is a holding company of a group of subsidiaries that are active in innovative medicines (pharmaceuticals and oncology products), generics and biosimilars and eye care.

Set forth on Schedule I to this Schedule 13D, and incorporated herein by reference, is a list of the executive officers and directors of the Reporting Persons that contains the following information with respect to each such person: (a) name, (b) business address, (c) present principal occupation or employment and the name, principal business and address of the corporation or other organization in which such employment is conducted, and (d) citizenship.

Neither the Reporting Persons nor, to the best knowledge of each of them, any of the persons set forth on Schedule I hereto, during the last five years, has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

Neither the Reporting Persons nor, to the best knowledge of each of them, any of the persons set forth on Schedule I hereto, during the last five years, was a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

Item 3. Source and Amount of Funds or Other Considerations

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On October 28, 2017, Parent and AAA entered into the Memorandum of Understanding (as amended on December 5, 2017, the **MoU**), a copy of which is included as Exhibit 2 to this Schedule 13D (including a copy of the First Amendment to the MoU, dated December 5, 2017, which is included as Exhibit 3 to this Schedule 13D), pursuant to which the Reporting Persons commenced an offer (the **Offer**) for Purchaser to purchase all of the outstanding Ordinary Shares and ADSs for U.S. \$41.00 per Ordinary Share and U.S. \$82.00 per ADS, in each case, payable net to the seller in cash, without interest, less any withholding taxes that may be applicable, upon the terms and subject to the conditions set forth in the Offer to Purchase, dated December 7, 2017 (as amended, the **Offer to Purchase**), a copy of which is included as Exhibit 4 to this Schedule 13D and was included as Exhibit (a)(1)(A) to the Tender Offer Statement on Schedule TO filed by the Reporting Persons with the U.S. Securities and Exchange Commission (the **SEC**) on December 7, 2017 (as amended, the **Schedule TO**), and the accompanying Ordinary Share Acceptance Form and American Depositary Share Letter of Transmittal, forms of which are included as Exhibits 5 and 6, respectively, to this Schedule 13D and were included as Exhibit (a)(1)(C) and Exhibit (a)(1)(E), respectively, to the Schedule TO.

The Offer expired as scheduled at 12:00 midnight, New York City time, on January 19, 2018 (which was the end of the day on January 19, 2018) (the **Expiration Date**). As of the Expiration Date, 93,669,093 Ordinary Shares (including Ordinary Shares represented by ADSs) were validly tendered and not properly withdrawn, representing approximately 97% of (a) all of the Ordinary Shares (including Ordinary Shares represented by ADSs) then outstanding (including any Ordinary Shares held in escrow), plus (b) all of the Ordinary Shares issuable upon the exercise, conversion or exchange of any options, warrants, convertible notes, stock appreciation rights or other rights to acquire Ordinary Shares then outstanding, regardless of whether or not then vested, plus (c) any Ordinary Shares issuable pursuant to the BioSynthema Former Owners Arrangement (as defined in the Offer to Purchase). Purchaser accepted for payment and, on January 22, 2018, commenced payment for, all Ordinary Shares and ADSs validly tendered and not properly withdrawn pursuant to the Offer.

On January 22, 2018, Purchaser commenced a subsequent offering period, during which tenders of Ordinary Shares and ADSs were accepted (the **Subsequent Offer Period**). The Subsequent Offer Period expired as scheduled at 12:00 midnight, New York City time, on January 31, 2018 (which was the end of the day on January 31, 2018). As of the expiration of the Subsequent Offer Period, a total of 95,127,753 Ordinary Shares (including Ordinary Shares represented by ADSs) were validly tendered during the initial offer period and the Subsequent Offer Period taken together, representing approximately 98.7% of the outstanding Ordinary Shares (including Ordinary Shares represented by ADSs). Purchaser has accepted for payment and has promptly paid (or will promptly pay) for all Ordinary Shares and ADSs validly tendered during the Subsequent Offer Period.

In connection with the Offer and the Subsequent Offer Period, the Reporting Persons paid an aggregate purchase price of U.S. \$3,900,237,873 to purchase the Ordinary Shares (including Ordinary Shares represented by ADSs) reported as beneficially owned in Item 5. The Reporting Persons financed the aggregate purchase price with funds from issuances of commercial paper and existing cash. The commercial paper was issued under an existing U.S. dollar commercial paper program, under which a wholly-owned Parent subsidiary is the issuer and which is guaranteed by Parent, with J.P. Morgan Securities LLC, Citigroup Global Markets Inc., Goldman Sachs & Co. LLC, Barclays Capital Inc., and Merrill Lynch, Pierce, Fenner & Smith Incorporated as dealers and Citibank, N.A. as issuing and paying agent. Under this program, the issuer may issue unsecured, short-term senior promissory notes of up to an aggregate of U.S. \$3.5 billion with maturities not exceeding nine months from the date of issuance and with interest rates based on the Parent's credit rating and short-term rates at the time of issuance. Parent or its affiliates intend to refinance the indebtedness raised through the issuance of commercial paper in full or partially with one or multiple bond offerings at terms and conditions to be determined.

All information contained in the Offer to Purchase is incorporated herein by reference. Additionally, references to, and descriptions of, the MoU as set forth herein are not intended to be complete and are qualified in their entirety by reference to the MoU, a copy of which is included as Exhibit 2 to this Schedule 13D, and the First Amendment to the MoU, dated December 5, 2017, a copy of which is included as Exhibit 3 to this Schedule 13D, each of which is incorporated by reference in this Item 3 in its entirety.

Item 4. Purpose of Transaction

The information set forth in Items 3 and 5 of this Schedule 13D is hereby incorporated by this reference in this Item 4.

The purpose of the transactions described in this Schedule 13D is for the Reporting Persons to acquire control of all of the outstanding Ordinary Shares (including Ordinary Shares represented by ADSs) of AAA while allowing all of AAA's shareholders (including ADS holders) an opportunity to receive the purchase price for the Ordinary Shares and/or ADSs, as applicable, promptly by tendering their Ordinary Shares and

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ADSs pursuant to the Offer.

To the extent permitted by applicable law, the Reporting Persons intend to cause AAA to de-list the ADSs from the NASDAQ Global Select Market (**NASDAQ**), to terminate registration of the Ordinary Shares under Section 12(g)(4) of the Securities and Exchange Act of 1934 (the **Exchange Act**) and to suspend AAA's reporting obligations under Section 15(d) of the Exchange Act. On February 1, 2018, AAA filed a Form 25 with the SEC to withdraw the ADSs from listing on the NASDAQ and to withdraw the registration of the Ordinary Shares under Section 12(b) of the Exchange Act. To the extent permitted under applicable law, the Reporting Persons also intend

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to cause AAA to file a Form 15 with the SEC to terminate registration of the Ordinary Shares under Section 12(g)(4) of the Exchange Act and suspend AAA's duty to file reports under Section 15(d) of the Exchange Act.

To the extent permitted under applicable law and the terms thereof, the Reporting Persons also intend to cause AAA to terminate the Deposit Agreement among AAA, The Bank of New York Mellon (the **ADS Depositary**) and owners and holders of ADSs, dated as of November 10, 2015 (the **ADS Deposit Agreement**), pursuant to which the ADS Depositary maintains an ADS facility for the Ordinary Shares. When and if the ADS Deposit Agreement is terminated, holders of the ADSs will only have the right to receive Ordinary Shares upon surrender of the ADSs and payment of a fee of U.S. \$5.00 (or less) per 100 ADSs (or portion of 100 ADSs) and any applicable taxes or governmental charges or other applicable charges to the ADS Depositary in accordance with the terms of the ADS Deposit Agreement. At any time after the expiration of four months from the termination date, the ADS Depositary may sell the remaining deposited Ordinary Shares and hold the proceeds of such sale (after deducting the fee of the ADS Depositary for the surrender of ADSs, any expenses for the holder's account in accordance with the ADS Deposit Agreement, and any applicable taxes or governmental charges or other applicable charges) for the benefit of holders of the ADSs that have not been surrendered.

Additionally, on January 22, 2018, in accordance with the terms of the MoU, five members of the AAA board of directors (the **Board**) resigned and four new directors were coopted. The resigning directors were Claudio Costamagna, Stefano Buono, Christine Mikail Cvijic, François Nader and Léopoldo Zambelletti, and the coopted directors were Frédéric Collet, Augusto Lima, Susanne Schaffert and Jessica Toepfer. Claudio Costamagna also resigned from his office as Chairman of the Board, Stefano Buono resigned from his office as *directeur général* of AAA and Gérard Ber and Heinz Mäusli each resigned from his office as *directeur général délégué* of AAA. The Board appointed Susanne Schaffert as the new Chairman of the Board and *directeur général* of AAA.

Furthermore, in accordance with the terms of the MoU, upon the de-listing of the ADSs from the NASDAQ, the Reporting Persons intend that four members of the Board, Augusto Lima, Steven Gannon, Christian Merle and Kapil Dhingra, will resign. The Reporting Persons do not intend to fill the vacancies resulting from these resignations.

Parent and Purchaser may consider, from time to time following consummation of the Offer, options available under applicable law to acquire any remaining Ordinary Shares and ADSs.

Item 5. Interest in Securities of the Issuer

The information set forth, or incorporated by reference, in Items 2, 3 and 4 of this Schedule 13D and the responses of the Reporting Persons to Rows 7 through 11 and Row 13 of the cover pages of this Schedule 13D are hereby incorporated by this reference in this Item 5.

(a) (b) Purchaser is the direct record owner or may be deemed to be the beneficial owner of 95,127,753 Ordinary Shares, representing approximately 98.7% of the Ordinary Shares. Parent, as the direct and indirect parent company of Purchaser, may be deemed to beneficially own all of the Ordinary Shares held directly by Purchaser.

Except as set forth above, neither of the Reporting Persons nor, to the knowledge of the Reporting Persons, any of the persons set forth on Schedule I hereto, has power to vote or to direct the vote or to dispose or direct the disposition of any Ordinary Shares.

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(c) Except as described in this Schedule 13D, no transactions in Ordinary Shares and ADSs were effected by any Reporting Person or, to the knowledge of the Reporting Persons, any of the persons set forth on Schedule I hereto, during the 60 days prior to the date hereof.

(d) Except as described in this Schedule 13D, to the knowledge of the Reporting Persons, none of the Reporting Persons nor any of the persons set forth on Schedule I hereto has the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the Ordinary Shares and ADSs reported herein.

(e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer

The information set forth under Items 3 and 4 of this Schedule 13D is incorporated herein by reference.

Concurrently with the execution of the MoU, the then-current members of the Board (Stefano Buono, Claudio Costamagna, Christine Mikail Cvijic, Kapil Dhingra, Steven Gannon, Christian Merle, François Nader and Léopoldo Zambelletti) and certain members of AAA's then-current senior management (Gérard Ber and Heinz Mäusli), in their capacity as shareholders, as well as an AAA shareholder affiliated with a member of the AAA Board (CC & Soci S.r.l.), entered into tender and support agreements with Parent (each, as amended by the First Amendment to the Tender and Support Agreements, dated as of December 6, 2017, a **Tender and Support Agreement**, and collectively, the **Tender and Support Agreements**) pursuant to which each shareholder agreed to (i) not transfer or dispose of any Ordinary Shares and ADSs, except for certain transfers to family members, trusts for the benefit of the shareholder or his/her family members or to affiliates (in the case of the shareholder that is not an individual); (ii) tender his/her/its Ordinary Shares and ADSs into the Offer upon the terms and conditions of such agreement, including any Ordinary Shares and ADSs acquired after the date of the Tender and Support Agreement; (iii) vote in favor of the MoU and the transactions contemplated by the MoU, and against (A) any action that would be a breach of the MoU, (B) any Alternate Proposal (as defined in the MoU, except that references to 25% in the definition will be replaced by references to 50%), (C) any amendment to AAA's organizational documents, (D) any change in AAA's capitalization or corporate structure, and (E) any other action that would materially delay, materially postpone, discourage or adversely affect the Offer or the other transactions contemplated by the MoU; and (iv) with respect to the directors and senior management who entered into Tender and Support Agreements, to tender his/her resignation from AAA (such resignation to be effective upon the occurrence of the Offer Acceptance Time (as defined in the MoU) or upon delisting of the ADSs from NASDAQ after the Offer Acceptance Time, depending on the individual) and support the appointment of Parent's replacement directors and members of management. The Ordinary Shares and ADSs subject to the Tender and Support Agreements were included in the 93,669,093 Ordinary Shares that were accepted by Purchaser in the Offer and, pursuant to the terms thereof, the Tender and Support Agreements terminated upon the occurrence of the Offer Acceptance Time on January 22, 2018.

Additionally, references to, and descriptions of, the Tender and Support Agreements as set forth herein are not intended to be complete and are qualified in their entirety by reference to the Tender and Support Agreements. A copy of the form of Tender and Support Agreement is included as Exhibit 7 to this Schedule 13D, and a copy of the First Amendment to the Tender and Support Agreements, dated December 6, 2017, is included as Exhibit 8 to this Schedule 13D, and each is incorporated by reference in this Item 6 in its entirety.

Except as disclosed in this Schedule 13D or as set forth in or contemplated in the MoU and the Tender and Support Agreements, there are no contracts, understandings or relationships between the Reporting Persons and any third person with respect to the Ordinary Shares and ADSs.

Item 7. Material to be Filed as Exhibits

- Exhibit 1. Joint Filing Agreement, dated February 1, 2018, between the Reporting Persons.
- Exhibit 2. Memorandum of Understanding, dated October 28, 2017, attached as Exhibit 99.2 of the Form 6-K filed by Advanced Accelerator Applications S.A. with the SEC on October 30, 2017 (incorporated herein by reference).
- Exhibit 3. First Amendment to the Memorandum of Understanding, dated December 5, 2017, by and between Novartis AG and Advanced Accelerator Applications S.A., attached as Exhibit (d)(2) of the Schedule TO filed by Novartis A.G. and Novartis Groupe France S.A. on December 7, 2017 (incorporated herein by reference).
- Exhibit 4. Offer to Purchase, dated December 7, 2017, attached as Exhibit (a)(1)(A) of the Schedule TO filed by Novartis A.G. and Novartis Groupe France S.A. on December 7, 2017 (incorporated herein by reference).
- Exhibit 5. Form of Ordinary Share Acceptance Form, attached as Exhibit (a)(1)(C) of the Schedule TO filed by Novartis A.G. and Novartis Groupe France S.A. on December 7, 2017 (incorporated herein by reference).
- Exhibit 6. Form of American Depositary Share Letter of Transmittal, attached as Exhibit (a)(1)(E) of the Schedule TO filed by Novartis A.G. and Novartis Groupe France S.A. on December 7, 2017 (incorporated herein by reference).
- Exhibit 7. Form of Tender and Support Agreement, entered as of October 28, 2017, by and between Novartis AG and each of Stefano Bueno, Gérard Ber, Claudio Costamagna, CC & Soci S.r.l., Christine Mikail Cvijic, Kapil Dhingra, Steven Gannon, Heinz Mäusli, Christian Merle, François Nader and Léopoldo Zambeletti, attached as Exhibit (d)(4) of the Schedule TO filed by Novartis A.G. and Novartis Groupe France S.A. on December 7, 2017 (incorporated herein by reference).
- Exhibit 8. First Amendment to the Tender and Support Agreements, dated as of December 6, 2017, by and among Novartis AG, Stefano Bueno, Gérard Ber, Claudio Costamagna, CC & Soci S.r.l., Christine Mikail Cvijic, Kapil Dhingra, Steven Gannon, Heinz Mäusli, Christian Merle, François Nader and Léopoldo Zambeletti, attached as Exhibit (d)(5) of the Schedule TO filed by Novartis A.G. and Novartis Groupe France S.A. on December 7, 2017 (incorporated herein by reference).

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: February 1, 2018

NOVARTIS GROUPE FRANCE S.A.

By:	/s/ Ramon Zapata	
	Name:	Ramon Zapata
	Title:	As Attorney

By:	/s/ Benjamin Brod	
	Name:	Benjamin Brod
	Title:	As Attorney

NOVARTIS AG

By:	/s/ Keren Haruvi	
	Name:	Keren Haruvi
	Title:	As Attorney

By:	/s/ Jonathan Emery	
	Name:	Jonathan Emery
	Title:	As Attorney

[Signature Page Schedule 13D]

Schedule I

Directors and Executive Officers of Novartis AG and Novartis Groupe France S.A.Directors and Executive Officers of Novartis AG

The following sets forth the (a) name, (b) business address, (c) present principal occupation or employment and the name, principal business and address of the corporation or other organization in which such employment is conducted, and (d) citizenship of each of the directors and executive officers of Novartis AG. Unless otherwise indicated below, (i) the director's or executive officer's business address is located at Lichstrasse 35, CH-4056, Basel, Switzerland, and (ii) the name, principal business and address of the corporation or other organization in which a director's or an executive officer's employment is conducted refers to Novartis AG as described in the Reporting Persons' response to Item 2 of this Schedule 13D, which is incorporated herein by reference.

Name	Relationship to Novartis AG	Present Principal Occupation	Citizenship
Joerg Reinhardt, Ph.D	Chairman of the Board of Directors	Chairman of the Board of Directors	German
Enrico Vanni, Ph.D	Vice Chairman of the Board of Directors and Chairman of the Compensation Committee	Independent Consultant	Swiss
Nancy C. Andrews, M.D., Ph.D	Director	Professor of pediatrics, pharmacology and cancer biology at Duke University	American
Dimitri Azar, M.D.	Director	Dean of the College of Medicine and professor of ophthalmology, bioengineering and pharmacology at the University of Illinois at Chicago	American
Ton Buechner	Director	Until 2017, chairman and CEO of the executive board of Dutch multinational AkzoNobel	Dutch
Srikant Datar, Ph.D	Director	Arthur Lowes Dickinson professor of business administration at Harvard Business School; senior associate dean for university affairs at Harvard Business School	American
Elizabeth (Liz) Doherty	Director	Director of Dunelm Group PLC; director of Corbion NV	British
Ann Fudge	Director	Vice chairman and senior independent director of Unilever NV	American
Frans van Houten	Director		Dutch

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		CEO and chairman of the executive committee and the board of management of Royal Philips	
Pierre Landolt, Ph.D	Director	Chairman of the Sandoz Family Foundation; chairman of the Swiss private bank Landolt & Cie SA	Swiss
Andreas von Planta, Ph.D	Director	Board member of Helvetia Holding AG	Swiss
Charles L. Sawyers,	Director	Chair of the Human Oncology and	American

Name	Relationship to Novartis AG	Present Principal Occupation	Citizenship
M.D.		Pathogenesis Program at Memorial Sloan Kettering Cancer Center	
William T. Winters	Director	CEO and a board member of Standard Chartered	American, British
Vasant (Vas) Narasimhan, M.D.	Chief Executive Officer	Chief Executive Officer	American
Steven Baert	Member of Executive Committee; Chief Executive Officer	Member of the Executive Committee; Chief Executive Officer	American
F. Michael (Mike) Ball	Member of Executive Committee; CEO of Alcon	Member of Executive Committee; CEO of Alcon	American
James (Jay) Bradner	Member of Executive Committee; President of Novartis Institutes for BioMedical Research	President of Novartis Institutes for BioMedical Research; Member of Executive Committee	American
Felix R. Ehrat	Member of Executive Committee; Group General Counsel	Member of Executive Committee; Group General Counsel	Swiss
Richard Francis	Member of Executive Committee; CEO of Sandoz	Member of Executive Committee; CEO of Sandoz	British
Paul Hudson	Member of Executive Committee; CEO of Novartis Pharmaceuticals	Member of Executive Committee; CEO of Novartis Pharmaceuticals	British
Harry Kirsch	Member of Executive Committee; Chief Financial Officer	Member of Executive Committee; Chief Financial Officer	German
Elizabeth (Liz) Barrett	Member of Executive Committee; CEO of Novartis Oncology	Member of Executive Committee; CEO of Novartis Oncology	American
André Wyss	Member of Executive Committee; President of Novartis Operations	Member of Executive Committee; President of Novartis Operations	Swiss

Directors and Executive Officers of Novartis Groupe France S.A.

The following sets forth the (a) name, (b) business address, (c) present principal occupation or employment and the name, principal business and address of the corporation or other organization in which such employment is conducted, and (d) citizenship of each of the directors and executive officers of Novartis Groupe France S.A. Unless otherwise indicated below, (i) the director's or executive officer's business address is located at 2/4, rue Lionel Terray, 92500 Rueil-Malmaison, France, and (ii) the name, principal business and address of the corporation or other organization in which a director's or an executive officer's employment is conducted refers to Novartis Groupe France S.A. as described in the Reporting Persons' response to Item 2 of this Schedule 13D, which is incorporated herein by reference.

Name	Relationship to Novartis Groupe France S.A.	Present Principal Occupation	Citizenship
Frédéric Collet	Head of Executive Committee; President; Chief Executive of Novartis Oncology France	Head of Executive Committee; President; Chief Executive of Novartis Oncology France	French
Jessica Toepfer	Country CFO France	Country CFO France	French
Christophe Delenta	Country Head of Sandoz France	Country Head of Sandoz France	French
Véronique Ameye	Member of Executive Committee; Head of Market Access in France; Executive Director in charge of Economic and Institutional Relations	Head of Market Access in France; Executive Director in charge of Economic and Institutional Relations; and a member of the Novartis Executive Committee in France	French
Franck Hamalian	Director; President of Alcon France	President of Alcon France	French
Luc Beaulieu	Member of Executive Committee; Country Pharma Head at Novartis Pharmaceuticals France	Member of Executive Committee; Country Pharma Head at Novartis Pharmaceuticals France	French