

# GROUNDBREAKING RESEARCH

## GLOBAL COMMUNITIES

72  
Advisors

263  
Fellows

428  
researchers\*

161  
institutions

26  
CIFAR Azrieli  
Global Scholars

18  
countries

80  
Canada CIFAR  
AI Chairs

3,000+

researchers, policy-makers, and industry leaders came together for **94 meetings** and events, totalling **116 days** of meetings in 2019–2020.

## STAYING CONNECTED

 **34** program meetings and cross-programmatic events in 2019–2020

Of which **18** were held virtually from March 2020 to June 2020.

## EXTRAORDINARY MINDS

 **105** major awards received by fellows, advisors, CIFAR Azrieli Global Scholars, and Canada CIFAR AI Chairs

Including the 2019 **Körber European Science Prize**, the 2019 **Social Sciences and Humanities Research Council Gold Medal**, and two **Sloan Fellowships**

## ADDRESSING THE MOST IMPORTANT QUESTIONS FACING SCIENCE AND HUMANITY

 **1611**  
publications influenced by CIFAR activities\*\*

 **437**  
publications authored by two or more CIFAR researchers\*\*\*

**93.1%** of researchers report that participation in CIFAR activities has positively informed or impacted their research (e.g. influence on their research directions, new ideas, etc.)

## HIGH-IMPACT SCHOLARSHIP

 **TOP 1%**

**256** fellows, advisors, CIFAR Azrieli Global Scholars, and Canada CIFAR AI Chairs (**60%**) contributed to the top **1%** of most-cited papers worldwide from 2013 to 2017.\*\*\*\*

## A HUB FOR COLLABORATION

 **60** formal partnerships with governments, research organizations, industry, and foundations



### CIFAR'S 20TH NOBEL CONNECTION

Manitoba-born James Peebles, Albert Einstein Professor Emeritus of Science at Princeton University, was awarded the **2019 Nobel Prize in Physics** "for contributions to our understanding of the evolution of the universe and Earth's place in the cosmos." He was a founding member of CIFAR's Cosmology & Gravity program in 1985, in which he remained actively engaged for more than 25 years.

### NOBEL PRIZES AWARDED TO CIFAR-AFFILIATED RESEARCHERS

**20**

\* Includes researchers in all CIFAR programs, including Institutions, Organizations & Growth, Successful Societies, and Genetic Networks, since they continued to hold CIFAR-supported meetings as part of their transition to alumni. 13 Canada CIFAR AI Chairs are also appointed as fellows or advisors in CIFAR research programs.

\*\* Self-reported number of peer-reviewed journal articles & conference papers, books and book chapters, and publicly released working papers, white papers, or policy reports influenced by participation in CIFAR programs. (Source: Program Member Annual Reports, 2020, n=202 researchers.) Excludes researchers in sunset programs because they were not required to fill in the Annual Survey.

\*\*\* Self-reported number of publications co-authored with other CIFAR researchers. (Source: Program Member Annual Reports, 2020, n=202 researchers.) Excludes researchers in sunset programs because they were not required to fill in the Annual Survey.

\*\*\*\* Percentage of CIFAR researchers contributing to the top 1% of most-cited papers at the world level from 2013 to 2017. Statistics produced by Science-Metrix using data from Scopus (Elsevier).

# SELECTED AWARDS & HONOURS RECEIVED

In 2019–2020, CIFAR Fellows, Advisors, CIFAR Azrieli Global Scholars and Canada CIFAR AI Chairs received **105 major awards and honours**. In addition, Rebecca Finlay, Vice-President, Engagement & Public Policy, CIFAR was elected as a Fellow of the American Association for the Advancement of Science and James Peebles, a founding fellow of CIFAR's Cosmology & Gravity program (now Gravity & the Extreme Universe), received a 2019 Nobel Prize in Physics.

## AWARDS

### 3M NON-TENURED FACULTY AWARD (USA)

**Ximin He** (University of California, Los Angeles) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholars*

### AI 2000 MOST INFLUENTIAL SCHOLARS – MACHINE LEARNING 2020 (AMINER, CHINA)

**Jimmy Ba** (University of Toronto and Vector Institute) *Learning in Machines & Brains and Canada CIFAR AI Chairs*

**Yoshua Bengio** (Université de Montréal and Mila) *Learning in Machines & Brains and Canada CIFAR AI Chairs*

**Aaron Courville** (Université de Montréal and Mila) *Learning in Machines & Brains and Canada CIFAR AI Chairs*

**Geoffrey Hinton** (University of Toronto, Vector Institute and Google Research), *Learning in Machines & Brains*

### AI 2000 MOST INFLUENTIAL SCHOLARS – NATURAL LANGUAGE PROCESSING 2020 (AMINER, CHINA)

**Yoshua Bengio** (Université de Montréal and Mila) *Learning in Machines & Brains and Canada CIFAR AI Chairs*

**Kyunghyun Cho** (New York University) *Learning in Machines & Brains and CIFAR Azrieli Global Scholar Alumni*

**Christopher Manning** (Stanford University) *Learning in Machines & Brains*

### AI 2000 MOST INFLUENTIAL SCHOLARS – ROBOTICS 2020 (AMINER, CHINA)

**Pieter Abbeel** (University of California, Berkeley) *Learning in Machines & Brains*

### AI 2000 MOST INFLUENTIAL SCHOLARS – SPEECH RECOGNITION 2020 (AMINER, CHINA)

**Geoffrey Hinton** (University of Toronto, Vector Institute and Google Research) *Learning in Machines & Brains*

### ALFRED P. SLOAN RESEARCH FELLOW (ALFRED P. SLOAN FOUNDATION, USA)

**Renée Hložek** (University of Toronto) *Gravity & the Extreme Universe and CIFAR Azrieli Global Scholars*

**Adrian Liu** (McGill University) *Gravity & the Extreme Universe and CIFAR Azrieli Global Scholars*

### AWARD FOR EXCELLENCE IN MATERIALS CHEMISTRY (CANADIAN SOCIETY FOR CHEMISTRY)

**Curtis Berlinguette** (University of British Columbia) *Bio-inspired Solar Energy*

### BARRINGTON MOORE BOOK AWARD (AMERICAN SOCIOLOGICAL ASSOCIATION)

**Andreas Wimmer** (Columbia University) *Boundaries, Membership & Belonging*

### BBVA FOUNDATION FRONTIERS OF KNOWLEDGE AWARD (SPAIN)

**Philippe Aghion** (Collège de France) *Institutions, Organizations & Growth*

**Gilles Brassard** (Université de Montréal) *Quantum Information Science*

**Bernhard Schölkopf** (Max Planck Institute for Intelligent Systems) *Learning in Machines & Brains*

### BREAKTHROUGH PRIZE IN FUNDAMENTAL PHYSICS (USA)

**Daryl Haggard** (McGill University) *CIFAR Azrieli Global Scholar Alumni (Gravity & the Extreme Universe)*

**Ue-Li Pen** (University of Toronto) *Gravity & the Extreme Universe*

### C.L. DE CARVALHO-HEINEKEN PRIZE FOR COGNITIVE SCIENCE (ROYAL NETHERLANDS ACADEMY OF ARTS AND SCIENCES)

**Robert Zatorre** (McGill University) *Azrieli Program in Brain, Mind & Consciousness*

### CAMILLE DREYFUS TEACHER-SCHOLAR AWARD (CAMILLE AND HENRY DREYFUS FOUNDATION, USA)

**Gabriela Schlau-Cohen** (Massachusetts Institute of Technology) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholar Alumni*

### CLAIR C. PATTERSON AWARD (GEOCHEMICAL SOCIETY, USA)

**Barbara Sherwood Lollar** (University of Toronto) *Earth 4D: Subsurface Science & Exploration*

### CREATIVE DESTRUCTION LAB IDEA AWARD (CANADA)

**Alán Aspuru-Guzik** (University of Toronto and Vector Institute) *Bio-inspired Solar Energy and Canada CIFAR AI Chairs*

**Raquel Urtasun** (University of Toronto) *Learning in Machines & Brains*

### DISCOVERY ACCELERATOR SUPPLEMENT (NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL, CANADA)

**Blake Richards** (McGill University and Mila) *Learning in Machines & Brains and Canada CIFAR AI Chairs*

### DOROTHY CROWFOOT HODGKIN AWARD (THE PROTEIN SOCIETY, USA)

**Catherine Drennan** (Massachusetts Institute of Technology) *Bio-inspired Solar Energy*

### EARLY-CAREER SPOTLIGHT AWARD (ROBOTICS: SCIENCE AND SYSTEMS FOUNDATION, USA)

**Angela Schoellig** (University of Toronto and Vector Institute) *Canada CIFAR AI Chairs*

### EARLY RESEARCHER AWARD (GOVERNMENT OF ONTARIO, CANADA)

**Jean-Philippe Julien** (Hospital for Sick Children, Toronto) *Molecular Architecture of Life and CIFAR Azrieli Global Scholars*

### ENGINEERING MEDAL FOR ENGINEERING EXCELLENCE (PROFESSIONAL ENGINEERS OF ONTARIO, CANADA)

**Goldie Nejat** (University of Toronto) *Innovation, Equity & the Future of Prosperity*

### EPIQS EXPERIMENTAL INVESTIGATOR (GORDON AND BETTY MOORE FOUNDATION, USA)

**Peter Armitage** (Johns Hopkins University) *Quantum Materials*

**Pablo Jarillo-Herrero** (Massachusetts Institute of Technology) *Quantum Materials*

### FACEBOOK PYROBOT: DEMOCRATIZING ROBOTICS RESEARCH AWARD (USA)

**Liam Paull** (Université de Montréal and Mila) *Canada CIFAR AI Chairs*

### FACULTY EARLY CAREER DEVELOPMENT (CAREER) AWARD (NATIONAL SCIENCE FOUNDATION, USA)

**Prineha Narang** (Harvard University) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholars*

### FRIEDRICH WILHELM BESSEL RESEARCH AWARD (ALEXANDER VON HUMBOLDT FOUNDATION, GERMANY)

**Tobias Rees** (New School and Berggruen Institute) *Humans & the Microbiome*

### GOOGLE FACULTY RESEARCH AWARD (USA)

**Kyunghyun Cho** (New York University) *Learning in Machines & Brains and CIFAR Azrieli Global Scholar Alumni*

### GOOGLE QUANTUM RESEARCH AWARD (USA)

**Juan Felipe Carrasquilla** (University of Waterloo and Vector Institute) *Canada CIFAR AI Chairs*

### HAMBURG PRIZE FOR THEORETICAL PHYSICS (GERMANY)

**Matthias Troyer** (Microsoft) *Quantum Information Science*

### JAN SÖDERBERG FAMILY PRIZE IN ECONOMICS AND MANAGEMENT (SWEDEN)

**Nathan Nunn** (Harvard University) *Boundaries, Membership & Belonging*

### JOHN BATES CLARK MEDAL (AMERICAN ECONOMIC ASSOCIATION)

**Melissa Dell** (Harvard University) *Institutions, Organizations & Growth*

### JOHN CHARLES POLANYI PRIZE (GOVERNMENT OF ONTARIO AND COUNCIL OF ONTARIO UNIVERSITIES)

**Maria Drout** (University of Toronto) *Gravity & the Extreme Universe and CIFAR Azrieli Global Scholars*

### JOSEPH O. HIRSCHFELDER PRIZE IN THEORETICAL CHEMISTRY (THEORETICAL CHEMISTRY INSTITUTE, USA)

**Sharon Hammes-Schiffer** (Yale University) *Bio-inspired Solar Energy*

### KILLAM PRIZE FOR THE NATURAL SCIENCES (CANADA COUNCIL FOR THE ARTS)

**Barbara Sherwood-Lollar** (University of Toronto) *Earth 4D: Subsurface Science & Exploration*

### KÖRBER EUROPEAN SCIENCE PRIZE (KÖRBER FOUNDATION, GERMANY)

**Bernhard Schölkopf** (Max Planck Institute for Intelligent Systems) *Learning in Machines & Brains*

### KYUNG-AHM PRIZE (KYUNG-AHM EDUCATION & CULTURAL FOUNDATION, SOUTH KOREA)

**Keun Lee** (Seoul National University) *Innovation, Equity & the Future of Prosperity*

### LIFETIME ACHIEVEMENT AWARD (CANADIAN IMAGE PROCESSING AND PATTERN RECOGNITION SOCIETY)

**David Fleet** (University of Toronto and Vector Institute) *Canada CIFAR AI Chairs*

### MACARTHUR FELLOWSHIP (MACARTHUR FOUNDATION, USA)

**Jenny Tung** (Duke University) *Child & Brain Development*

### MICROSOFT RESEARCH FACULTY FELLOWSHIP (MICROSOFT, USA)

**Chelsea Finn** (Stanford University) *Learning in Machines & Brains*

### MISSION AWARD (SOCIETY FOR THE IMPROVEMENT OF PSYCHOLOGICAL SCIENCE, USA)

**Laurel Trainor** (McMaster University) *Azrieli Program in Brain, Mind & Consciousness*

**Sandra Waxman** (Northwestern University) *Azrieli Program in Brain, Mind & Consciousness*

**NATHAN ROSEN PRIZE IN EXPERIMENTAL PHYSICS (ISRAEL PHYSICAL SOCIETY)**

**Iair Arcavi** (Tel Aviv University) *Gravity & the Extreme Universe and CIFAR Azrieli Global Scholars*

**NATURE'S 10 PEOPLE WHO MATTERED THIS YEAR (2019)**

**Victoria Kaspi** (McGill University) *Gravity & the Extreme Universe*

**NEW HORIZONS PRIZE (FUNDAMENTAL PHYSICS BREAKTHROUGH PRIZE, USA)**

**Kendrick Smith** (Perimeter Institute for Theoretical Physics) *Gravity & the Extreme Universe*

**NEW INVESTIGATOR AWARD (CANADIAN SOCIETY FOR IMMUNOLOGY)**

**Jean-Philippe Julien** (Hospital for Sick Children) *Molecular Architecture of Life and CIFAR Azrieli Global Scholars*

**NOBEL LAUREATE SIGNATURE AWARD FOR GRADUATE EDUCATION IN CHEMISTRY (AMERICAN CHEMICAL SOCIETY)**

**Yogesh Surendranath** (Massachusetts Institute of Technology) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholars*

**NSERC INDUSTRIAL RESEARCH CHAIR (GOOGLE AND NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL, CANADA)**

**Alán Aspuru-Guzik** (University of Toronto and Vector Institute) *Bio-inspired Solar Energy and Canada CIFAR AI Chairs*

**OLIVER E. BUCKLEY CONDENSED MATTER PHYSICS PRIZE (AMERICAN PHYSICAL SOCIETY)**

**Pablo Jarillo-Herrero** (Massachusetts Institute of Technology) *Quantum Materials*

**OTHMER GOLD MEDAL (SCIENCE HISTORY INSTITUTE, USA)**

**Dame Carol Robinson** (University of Oxford) *Molecular Architecture of Life*

**PRESIDENTIAL EARLY CAREER AWARD FOR SCIENTISTS AND ENGINEERS (PECASE) (USA)**

**Nathaniel Gabor** (University of California, Riverside) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholar Alumni*

**Yogesh Surendranath** (Massachusetts Institute of Technology) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholars*

**Thomas Vidick** (California Institute of Technology) *Quantum Information Science and CIFAR Azrieli Global Scholar Alumni*

**ROYAL MEDAL (ROYAL SOCIETY, UNITED KINGDOM)**

**Dame Carol Robinson** (University of Oxford) *Molecular Architecture of Life*

**SCIALOG FELLOW (RESEARCH CORPORATION FOR SCIENCE ADVANCEMENT, USA)**

**Nathaniel Gabor** (University of California, Riverside) *Bio-inspired Solar Energy and CIFAR Azrieli Global Scholar Alumni*

**Magdalena Osburn** (Northwestern University) *Earth 4D: Subsurface Science & Exploration*

**Joel Zylberberg** (York University) *Learning in Machines & Brains and CIFAR Azrieli Global Scholar Alumni*

**SHAW PRIZE IN ASTRONOMY (SHAW PRIZE FOUNDATION, HONG KONG, CHINA)**

**Roger Blandford** (Stanford University) *Gravity & the Extreme Universe*

**SSHRC GOLD MEDAL (SOCIAL SCIENCES AND HUMANITIES RESEARCH COUNCIL, CANADA)**

**Will Kymlicka** (Queen's University) *Boundaries, Membership & Belonging*

**STEIN ROKKAN PRIZE FOR COMPARATIVE SOCIAL SCIENCE RESEARCH (INTERNATIONAL SCIENCE COUNCIL)**

**Andreas Wimmer** (Columbia University) *Boundaries, Membership & Belonging*

**TD'S 10 MOST INFLUENTIAL HISPANIC CANADIANS**

**Luis Lehner** (University of Waterloo) *Gravity & the Extreme Universe*

**WILLIAM DAWSON SCHOLAR (CANADA)**

**Adrian Liu** (McGill University) *Gravity & the Extreme Universe and CIFAR Azrieli Global Scholars*

**WISTEM2D SCHOLARS AWARD (JOHNSON & JOHNSON)**

**Carolina Tropini** (University of British Columbia) *Humans & the Microbiome and CIFAR Azrieli Global Scholars*

**WOLF PRIZE FOR PHYSICS (WOLF FOUNDATION, ISRAEL)**

**Pablo Jarillo-Herrero** (Massachusetts Institute of Technology) *Quantum Materials*

**Allan MacDonald** (University of Texas at Austin) *Quantum Materials*

**Victoria Orphan** (California Institute of Technology) *Earth 4D: Subsurface Science & Exploration*

**Eva Silverstein** (Stanford University) *Gravity & the Extreme Universe*

**FELLOW OF THE AMERICAN ACADEMY OF MICROBIOLOGY**

**David Blehert** (United States Geological Survey) *Fungal Kingdom: Threats & Opportunities*

**Christina Cuomo** (Broad Institute) *Fungal Kingdom: Threats & Opportunities*

**Matthew Fisher** (Imperial College London) *Fungal Kingdom: Threats & Opportunities*

**Sarah Gurr** (University of Exeter) *Fungal Kingdom: Threats & Opportunities*

**Hailing Jin** (University of California, Riverside) *Fungal Kingdom: Threats & Opportunities*

**Jason Stajich** (University of California, Riverside) *Fungal Kingdom: Threats & Opportunities*

**Eva Stukenbrock** (Max Planck Institute of Evolutionary Biology) *Fungal Kingdom: Threats & Opportunities*

**FELLOW OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE**

**Vasiliki Kalogera** (Northwestern University) *Gravity & the Extreme Universe*

**Arthur McDonald** (Queen's University) *Gravity & the Extreme Universe*

**FELLOW OF THE AMERICAN PHYSICAL SOCIETY**

**James Analytis** (University of California, Berkeley) *Quantum Materials*

**FELLOW OF THE ASSOCIATION OF COMPUTING MACHINERY**

**Sheila McIlraith** (University of Toronto) *Canada CIFAR AI Chairs*

**FELLOW OF THE GEOLOGICAL SOCIETY OF AMERICA**

**Jennifer McIntosh** (University of Arizona) *Earth 4D: Subsurface Science & Exploration*

**FELLOW OF THE LATIN AMERICAN ACADEMY OF SCIENCES**

**Maria Gloria Dominguez-Bello** (Rutgers University) *Humans & the Microbiome*

**FELLOW OF THE ROYAL SOCIETY (UNITED KINGDOM)**

**Yoshua Bengio** (Université de Montréal and Mila) *Learning in Machines & Brains and Canada CIFAR AI Chairs*

**FOREIGN ASSOCIATE OF THE NATIONAL ACADEMY OF SCIENCES (USA)**

**Brenda Andrews** (University of Toronto) *Genetic Networks*

**Lewis Kay** (University of Toronto) *Molecular Architecture of Life*

**FOREIGN MEMBER OF THE ROYAL SOCIETY (UNITED KINGDOM)**

**Regine Kahmann** (Max Planck Institute for Terrestrial Microbiology) *Fungal Kingdom: Threats & Opportunities*

**GEOCHEMISTRY FELLOW (GEOCHEMICAL SOCIETY AND THE EUROPEAN ASSOCIATION OF GEOCHEMISTRY)**

**Barbara Sherwood Lollar** (University of Toronto) *Earth 4D: Subsurface Science & Exploration*

**HONORARY FELLOW OF THE JOHN BELL INSTITUTE FOR THE FOUNDATIONS OF PHYSICS**

**Aephraim Steinberg** (University of Toronto) *Quantum Information Science*

**INTERNATIONAL MEMBER OF THE NATIONAL ACADEMY OF ENGINEERING (USA)**

**Claudia Felser** (Max Planck Institute for Chemical Physics of Solids) *Quantum Materials*

**LEGACY FELLOW OF THE AMERICAN ASTRONOMICAL SOCIETY**

**J. Richard Bond** (University of Toronto) *Gravity & the Extreme Universe*

**MEMBER OF THE COLLEGE OF NEW SCHOLARS, ARTISTS AND SCIENTISTS (ROYAL SOCIETY OF CANADA)**

**Jean-Philippe Julien** (Hospital for Sick Children, Toronto) *Molecular Architecture of Life and CIFAR Azrieli Global Scholars*

**MEMBER OF THE EUROPEAN ACADEMY OF SCIENCES**

**Brett Finlay** (University of British Columbia) *Humans & the Microbiome*

**Claudia Felser** (Max Planck Institute for Chemical Physics of Solids) *Quantum Materials*

**MEMBER OF THE SOCIETY OF MULTIVARIATE EXPERIMENTAL PSYCHOLOGY**

**Candice Odgers** (University of California, Irvine) *Child & Brain Development*

**MEMBER OF THE NATIONAL ACADEMY OF SCIENCES (USA)**

**Janet Werker** (University of British Columbia) *Azrieli Program in Brain, Mind & Consciousness*

## HONOURS

**CORRESPONDING FELLOW OF THE BRITISH ACADEMY**

**Michèle Lamont** (Harvard University) *Successful Societies*

**Hazel Markus** (Stanford University) *Boundaries, Membership & Belonging*

**FELLOW OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES**

**Catherine Drennan** (Massachusetts Institute of Technology) *Bio-inspired Solar Energy*

**Karen Guillemin** (University of Oregon) *Humans & the Microbiome*

**Joseph Heitman** (Duke University) *Fungal Kingdom: Threats & Opportunities*