Davos Alzheimer’s Collaborative: Accelerating and Diversifying Global Innovation
The Need for A Global Response to Alzheimer’s Disease

Dementia is a substantial global health issue. Reduction in future numbers of dementia cases...could significantly affect the personal and socioeconomic burdens of dementia. WHO has recommended that countries urgently develop national public health programmes to reduce the impact of dementia. This is particularly essential in low-income and middle-income countries (LMICs), which are home to about two-thirds of the people living with dementia globally, but have lower availability of the resources needed to cope with dementia-related care compared with high-income countries (HICs).

- Lancet Global Health, April 2020

The world faces an emerging pandemic. Alzheimer’s disease threatens global health and wealth at a time when caregiving and working-age populations are shrinking, when national fiscal budgets needed to support aging-related healthcare costs are under stress, and when the monetary policy mechanisms to drive economic growth in the face of a declining global workforce are exhausted.

Yet we have no global plan or mechanism to meet this challenge. While there have been important recent scientific advances and policy milestones at a company, academic or national level, these positive steps are neither linked nor at global scale and, as a result, the world is still not bringing the full range of collaboration, innovations, resources and tools to this fight. The result is uneven progress and disjointed efforts for every part of the Alzheimer’s response, from basic research to clinical trials to care delivery.

In research, approximately 90% of genomic data comes from people of Western European origin, even though this group accounts for just 10% of the global population. This imbalance is not only inequitable—it prevents us from understanding the complex heterogeneity of the disease, which will be essential for bringing precision medicine to Alzheimer’s, delivering the right future treatments to the right person at the right time in the right population.

Clinical trial infrastructure is also poorly suited to the global scale of the challenge. The recruitment tools and site infrastructure needed for clinical trials is too dispersed and not connected. This makes trial recruitment long, expensive, and difficult, while also threatening to undermine the efficacy of an eventual treatment for those people and communities currently underrepresented in trials.
Diversity is Missing in Research and Slowing Precision Medicine in Alzheimer’s

Racial breakdown of participants in genome-wide association studies

No country’s healthcare system is fully-prepared for the fast-growing burden of Alzheimer’s. The foundation for delivering care – early detection of disease risk and accurate and actionable diagnoses – is at unacceptably low levels across the globe. Moreover, health systems in low- and middle-income countries (LMICs) are especially vulnerable where nearly 60% of people with Alzheimer’s and dementia live a number projected to rise rapidly in coming years.¹

These challenges indicate the urgent need for greater global collaboration on Alzheimer’s—and a mechanism capable of marshalling the full breadth of knowledge, resources, and innovations across every nation and sector.

¹ https://www.who.int/news-room/fact-sheets/detail/dementia
The World Economic Forum (WEF) and the Global CEO Initiative on Alzheimer’s Disease (CEOi) created the Davos Alzheimer’s Collaborative (DAC) to play this vital leadership role in mobilizing a truly global response to Alzheimer’s. Launched on January 25, 2021, at the Davos Agenda virtual meeting, the Davos Alzheimer’s Collaborative is a global multi-sector mechanism patterned after the successful approaches of WEF-incubated global mechanisms GAVI, the vaccine alliance, and CEPI.

“Drug development for Alzheimer’s is being held back by an incomplete understanding of the heterogeneity and the variability of the disease etiology. Building the research capacity in low to middle income countries, as well as enriching our understanding in high income countries, has the potential to unlock new targets for drug development. To this end, I have great hope for the effort the Davos Alzheimer’s Collaborative is undertaking to build a global cohort with high-quality, detailed data on a well-characterized, diverse population, readily available to researchers.”

—Dr. Elias Zerhouni,
Founding DAC Board Member, Co-chair, Global Cohort Development Work Group; Former Director, US National Institutes of Health; Former President, Sanofi R&D
Advised by top thought leaders in science, finance, and healthcare across the globe, DAC has already begun forming critical partnerships with international organizations and governments to drive innovation – with a particular focus on learning from and building opportunities with experts in parts of the world not often included in research and collaboration. See Appendix A for list of advisors.

As an initial set of initiatives to demonstrate that global collaboration across sectors, nations and regions, can broaden and accelerate scientific discovery and therapies, three specific, interlinked and ambitious projects are being launched:

**Global Cohort Development**
DAC aims to build a global cohort with high-quality, detailed data on a well-characterized, diverse population. Already, this effort has engaged cohorts representing 21 million persons on six continents and includes approximately 125,000 individual life years. The objective is to tap into the 90% of the world’s population not of Western European origin where little genetic, proteomic, or other Alzheimer’s biological study has been done to better understand the heterogeneity of Alzheimer’s.

**Global Clinical Trials Support Platform**
DAC aims to build a global clinical trial support platform that engages sites across countries in North America, Europe, East/Southeast/Southern Asia, and Australia, initially. The objective is to reduce the time and cost of global Alzheimer’s trials and to innovate new trial designs and recruitment strategies.

**Healthcare System Preparedness**
DAC aims to help facilitate the implementation of national health system commitments and strategies to diagnose Alzheimer’s in the 20+ year window before Alzheimer’s symptoms emerge. The objective is to enable early intervention with emerging disease-slowing drugs to prevent Alzheimer’s symptoms.
Our Focus in 2021

DAC’s total budget is approximately $700 million over the next six years, including $25M in a 2021 “foundational phase” intended to demonstrate our capacity to operationalize our programs.

In 2021, we aim to accomplish the following milestones:

**Organizational Structure**

- Set up an independently governed and professionally staffed organization to execute our strategies. A Swiss-based foundation, a US-based 501c3 and compatible Singapore-based structures are currently being negotiated with national authorities.
- Hire dedicated full-time DAC leadership and retain specialized consulting support.

**Global Cohorts**

- A cross-region heterogeneity exploration pilot to link cohorts including the Middle East, South East Asia, Africa and South America to more well-developed cohorts in the Western world to test our abilities to combine data and thereby provide a roadmap for further integration of racially distinct and diverse cohorts.
- A “higher-reach pilot” will provide resources to geographically diverse cohorts to include additional measures both one-time and longitudinal. The measurements range from imaging to genetic ‘omics mapping and sequencing to digital markers. These ‘gold standard’ data elements were identified through engagement in 2020 with the best-known research organizations in the world.
• Further develop the Alzheimer’s Data Atlas (demo currently available on the DAC website) and conduct a feasibility pilot with Gates Ventures’ funded Alzheimer’s Disease Data Initiative’s “AD Work Bench” as a platform to allow researchers to work with DAC developed data.

• Leverage the vast array of hardware, software and analytical advances to develop an operational infrastructure that will produce on-demand capabilities and rapid-fire solutions to any barriers to progress

Clinical Trials

• A North American network, led by the Global Alzheimer’s Platform (GAP), of more than 80 sites will continue to be enriched, organized and optimized for accelerating studies and implementing novel trial designs.

• Develop and deploy a transatlantic network adding to the North American network more than 40 European sites organized for accelerating studies and implementing novel trial designs.
  ○ The European network will include the 11 countries formerly encompassed by EPAD.
  ○ Establish recruitment teams, study/IT infrastructure and regulatory start up processes by region or country to optimize network performance.

• Develop a worldwide action plan to engage linked site networks in Singapore, Japan, China, and Australia and at least one trial site each in South America and Africa for activation in 2022-23
  ○ Design and establish a global rater certification program and an imaging center certification for the global network to ensure pre-qualified centers and experts when a study protocol is approved.

• Initiate the first Transatlantic therapeutic clinical trial using Global Alzheimer’s Platform (GAP) processes and the GAP North American/European network with a minimum of 110 sites in a combined North American/European clinical study.

• Evaluate, develop and deploy a biomarker-based (blood and/or digital) screening program for inclusion in therapeutic clinical trials for global use, as a foundation to redesigning global therapeutic trials so as to reduce their duration by two years and their cost by over $100 million.

• Develop a set of performance metrics (focusing on reporting and measuring quality, acceleration and lower cost, etc.) for each region/country on the six-year roadmap.
Healthcare System Preparedness

• Final 2021 measurement plan endorsed by DAC Healthcare System Preparedness Work Group.

• Flagship projects launched and further calls for proposal issued during the WEF Annual Meeting in Singapore in August.

• 12 governments committed to participating in a Health System Learning Lab with representation across high, low and middle income countries.

• Two convenings completed.

Our Six-Year Plan: Estimated Project Costs

<table>
<thead>
<tr>
<th></th>
<th>Global Cohort Development</th>
<th>Goal</th>
<th>2021 Foundation Phase</th>
<th>2022-2026</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Build a global cohort with high-quality detailed data on a well-characterized, diverse population to increase discovery of targets for drug development and identify associated biomarkers</td>
<td>$15M</td>
<td>$350M</td>
<td>$365M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Global Clinical Trials</th>
<th>Goal</th>
<th>2021 Foundation Phase</th>
<th>2022-2026</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>Build a global platform and network to reduce the cost and time to bring new treatments to market globally</td>
<td>$4M</td>
<td>$241M</td>
<td>$245M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Healthcare System Preparedness</th>
<th>Goal</th>
<th>2021 Foundation Phase</th>
<th>2022-2026</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td>Facilitate the implementation of global commitments to provide access to future innovations in treatment, diagnosis and care</td>
<td>$3M</td>
<td>$100M</td>
<td>$103M</td>
</tr>
</tbody>
</table>

Additional project budget detail, and other organizational costs, provided in Appendix B.
In Closing

Alzheimer’s is a pandemic-scale threat to public health and economic prosperity, and the crisis is only getting worse. Together, we can lead the world in the fight against the disease. We need your help.

Additional information on the effort is provided at www.davosalzheimerscollaborative.org.

Thank you, in advance, for your interest and support.

Arnaud Bernaert
DAC Foundation, Founding Board Member
Head of Life Sciences, World Economic Forum

Freda Lewis-Hall
DAC 501c3, Founding Board Member
Former Chief Medical Officer, Pfizer

Drew Holzapfel
DAC Foundation, Founding Board Member

George Vradenburg
DAC Foundation, Founding Board Member
DAC 501c3, Founding Board Member

Elias Zerhouni
DAC Foundation, Founding Board Member
Former Director, US National Institutes of Health

Contact information for DAC leadership and Secretariat can be found in Appendix C.
Appendix A

Our Leadership Group

Esko Aho  
Former Prime Minister, Finland

Arnaud Bernard  
Head, Health and Healthcare, World Economic Forum

Nirajjan Bose  
Managing Director, Health & Life Sciences, Gilead Sciences

Virt Cifu  
Vice President, Managing Director, Northern Kentucky University College of Business Administration

Amitabh Chandre  
Chief Executive Officer, Alzheimer’s Disease and Related Disorders Association

Rochelle Doody  
Global Head of Neurodegeneration and Alzheimer’s Disease, Biogen

Hillary Desford  
Former Vice-Chair, European Society of Neurology, American Neurological Association

John E. Dwyer, Jr.  
President, Global Alzheimer’s Platform

Andrew von Eschenbach  
Former Commissioner, U.S. Food and Drug Administration

Howard Fillit  
Founding Executive Director, Alzheimer’s Drug Discovery Foundation

Michel Goldman  
Founding Executive Director, Innovative Medicines Initiative

Margaret Hamburg  
Former Commissioner, U.S. Food and Drug Administration

Nancy Ip  
Vice President, Research and Development, The Hong Kong University of Science and Technology

Christopher Koennen  
Executive Vice President and Chief Medical Officer, Eli Lilly and Company

Mergery Krans  
Founder and Executive Chairman, aPCO Amsterdam

John Lim  
Chairman, McKee Group, California

David Mayhew  
Vice Chairman, Jardine Matheson, Chairman, Alzheimer’s Research UK

Haruo Naito  
President, Representative Director and Chairman, Respect Medical

Brendan O’Connor  
Executive Director, Alzheimer’s Disease Programme, National Health and Medical Research Council

Andrew Pillinger  
Co-Founder and Chief Executive Officer, Biogen

Kathleen Seibel  
Former Secretary, U.S. Department of Health and Human Services

Daniel Skovronsky  
Senior Vice President and Chief Scientific Officer, Biogen

Paul Stoffels  
Vice President and Head, Industry Strategic Diseases, Johnson & Johnson

Michel Vounatsos  
Chief Executive Officer, Biogen

George Vradenburg  
President, Alzheimer’s Disease (AD) Initiative, Johnson & Johnson

Elia Zerhouni  
Professor Emeritus, Johns Hopkins University, Former Director, National Institutes of Health, Former President ISSF, Stanford
Global Cohort Development Working Group and Advisors

Co-Chairs

Hakan Hakonarson
University of Pennsylvania; Children’s Hospital of Philadelphia; International Alzheimer’s Disease Research Consortium

Eliot Zerhouni
Johns Hopkins University; National Institutes of Health; Savera

Members & Advisors

Rhode Au
Boston University School of Medicine; Framingham Heart Study

Philip Avdolija
Ontario Institute for Cancer Research; University of Toronto

Sinead Chopmen
Seidell Institute of Health and Howard

Aked Edwards
Duke Center for Applied Genomics & Precision Medicine; International Rare Disease Cohort Consortium

Geoffrey Ginsburg
The Stanley Center for Psychiatric Research; Broad Institute of MIT and Harvard

Steven E. Hyman
Emory University; Henry Alzheimer Disease Research Center

Allen Levy

Mihailo Lovchik Benea
Blegen

Hussein Morj
Johnson & Johnson

Paul Morff
Cogability

Adesola Ogunkomi
University of Ibadan; University College Hospital, Ibadan

Jane Rylett
Canadian Institutes of Health Research; Institute of Aging; Schulich School of Medicine & Dentistry; University of Western Ontario

Nadeem Sarwar
East Center for Genomics-Driven Patient-Centric Discovery (E2DG); Ibis BioCo, Ltd.

George Yancopoulos
Regeneron Pharmaceuticals

Global Clinical Trial Support Platform Working Group and Advisors

Co-Chairs

John B. Dwyer, Jr.
Global Alzheimer’s Platform Foundation

Lynn Hughes

Members & Advisors

Christopher Austin
National Center for Advancing Translational Sciences; National Institutes of Health

Jeffrey Cummings
University of Nevada, Las Vegas; Cleveland Clinic Lou Ruvo Center for Brain Health; Scripps Translational Science Institute; Nevada; Nevada

Chris Edgar
Cognitive

Takehi Iwatate
Graduate School of Medicine, The University of Tokyo

Simon Lovestone
Janssen Inc.; University Of Oxford Medical Sciences Division

Emer McKeane
BacCognition Health

Ronald Petersen
Mayo Clinic Alzheimer’s Disease Research Center; World Alzheimer’s Council
Global Clinical Trial Support Platform Working Group and Advisors (cont.)

Co-Chairs

Phyllis Ferrell
Olly and Company

Anke Heavener
Moss Cerwinski Alphamain

Members & Advisors

Matthew Baumgart
Alzheimer’s Association

Samantha Benham-Hemmat
Alzheimer’s Research UK

Francesca Colombo
Organization for Economic Co-Operation and Development

Taran Dua
NHS-Healthcare Organization

Lori Frank
Farh Corporation

Karin Hellevik
Biogen

Shalooja Karukonda
Bay, Co., Ltd.

Lydia Lennon
Kohe

Nancy Lynn
Brightkuk Foundation

Soren Mattke
University of Southern California

Melissa Mitchell
Global Coalition on Aging

Ryoji Narita
Health and Global Risk Institute

Tanya O’Connor
Cogside

Desi Peneva
University of Southern California Schaefer Center

Joanne Pike
Alzheimer’s Association

Craig Ritchie
University of Edinburgh, Centre for Dementia Prevention

Lenny Sallcross
World Dementia Council

Sean Stanton
C2N Diagnostics

Eline Suzuki
Organization for Economic Co-Operation and Development

Luc Truyen
Johnian, Inc.

Don Wiberg
Homestead
## Appendix B

### Cohort Development Five-Year Costs

<table>
<thead>
<tr>
<th></th>
<th>Foundational Phase 2021</th>
<th>Year 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniform Data Set</td>
<td>$3M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$3M</td>
</tr>
<tr>
<td>Biosample Management</td>
<td>$500K</td>
<td>$1M</td>
<td>$1.5M</td>
<td>$2M</td>
<td>$2.5M</td>
<td>$3M</td>
<td>$10.5M</td>
</tr>
<tr>
<td>Data Infrastructure</td>
<td>$500K</td>
<td>$1M</td>
<td>$500K</td>
<td>$500K</td>
<td>$500K</td>
<td>$500K</td>
<td>$3.5M</td>
</tr>
<tr>
<td>Enrichment and Recruitment</td>
<td>$11M</td>
<td>$57M</td>
<td>$70M</td>
<td>$70M</td>
<td>$70M</td>
<td>$70M</td>
<td>$348M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Approx Total Budget $365M</td>
</tr>
</tbody>
</table>

### Clinical Trials Five-Year Costs

<table>
<thead>
<tr>
<th></th>
<th>Foundational Phase 2021</th>
<th>Year 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Coordination</td>
<td>$1M</td>
<td>$5.5M</td>
<td>$6.5M</td>
<td>$6M</td>
<td>$6.5M</td>
<td>$6.5M</td>
<td>$32M</td>
</tr>
<tr>
<td>North America</td>
<td>$1M</td>
<td>$8M</td>
<td>$9.5M</td>
<td>$9M</td>
<td>$10M</td>
<td>$10M</td>
<td>$47.5M</td>
</tr>
<tr>
<td>Europe</td>
<td>$1M</td>
<td>$10M</td>
<td>$11M</td>
<td>$10.5M</td>
<td>$11.5M</td>
<td>$11.5M</td>
<td>$55.5M</td>
</tr>
<tr>
<td>Australia and Singapore</td>
<td>$1M</td>
<td>$8M</td>
<td>$7.5M</td>
<td>$7.5M</td>
<td>$7.5M</td>
<td>$7.5M</td>
<td>$39M</td>
</tr>
<tr>
<td>Japan</td>
<td>$4M</td>
<td>$10M</td>
<td>$13M</td>
<td>$20M</td>
<td>$24M</td>
<td></td>
<td>$71M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Approx Total Budget $245M</td>
</tr>
</tbody>
</table>

### Healthcare System Preparedness Five-Year Costs

<table>
<thead>
<tr>
<th></th>
<th>Foundational Phase 2021</th>
<th>Year 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant/Investment Funding</td>
<td>$2M</td>
<td>$5M</td>
<td>$13M</td>
<td>$20M</td>
<td>$20M</td>
<td>$20M</td>
<td>$82M</td>
</tr>
<tr>
<td>Learning Laboratory</td>
<td>$500K</td>
<td>$2M</td>
<td>$2M</td>
<td>$3M</td>
<td>$4M</td>
<td>$5M</td>
<td>$18.5M</td>
</tr>
<tr>
<td>Communications and Convenings</td>
<td>$300K</td>
<td>$200K</td>
<td>$300K</td>
<td>$500K</td>
<td>$500K</td>
<td>$700K</td>
<td>$2.5M</td>
</tr>
<tr>
<td>General Administrative Expenses</td>
<td>$200K</td>
<td>$500K</td>
<td>$600K</td>
<td>$800K</td>
<td>$900K</td>
<td>$3M</td>
<td>$4M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Approx Total Budget $103M</td>
</tr>
</tbody>
</table>
## Organizational Administration

### Five-Year Costs

<table>
<thead>
<tr>
<th></th>
<th>Foundational Phase 2021</th>
<th>Year 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation, salary and wages</td>
<td>$1.5M</td>
<td>$2M</td>
<td>$2.5M</td>
<td>$2.5M</td>
<td>$3M</td>
<td>$3M</td>
<td>$14M</td>
</tr>
<tr>
<td>Consulting</td>
<td>$500K</td>
<td>$1M</td>
<td>$1M</td>
<td>$1M</td>
<td>$1M</td>
<td>$1.5M</td>
<td>$6M</td>
</tr>
<tr>
<td>Occupancy (rent, utilities, etc.)</td>
<td>$50K</td>
<td>$100K</td>
<td>$150K</td>
<td>$150K</td>
<td>$150K</td>
<td>$200K</td>
<td>$800K</td>
</tr>
<tr>
<td>Memberships, sponsorships, convenings</td>
<td>$50K</td>
<td>$100K</td>
<td>$150K</td>
<td>$200K</td>
<td>$250K</td>
<td>$250K</td>
<td>$1M</td>
</tr>
</tbody>
</table>

Approx Total Budget: **$21.8M**
Thank You

George Vradenburg
Vradenburg@aol.com
+1 202 414 0771

Drew Holzapfel
dholzapfel@highlanterngroup.com
+1 703 599 9617

Alissa Kurzman
akurzman@highlanterngroup.com
+1 215 990 0122

Arnaud Bernaert
Arnaud.Bernaert@weforum.org
+41 22 869 3655

Kelly McCain
Kelly.McCain@weforum.org
+41 79 123 60 19