



# Human Immunomics Initiative



**HARVARD T.H. CHAN**  
SCHOOL OF PUBLIC HEALTH

## European Initiative to protect the elderly against pandemics





## Why the elderly?

- COVID-19, as flu, pertussis, and pneumococcal infection disproportionately affect elderly populations
- Vaccine efficacy decreases significantly with age, driven by the progressive age-related decline of innate and adaptive immune responses
- The immune system of the elderly is not predisposed to counter viral attacks like COVID-19

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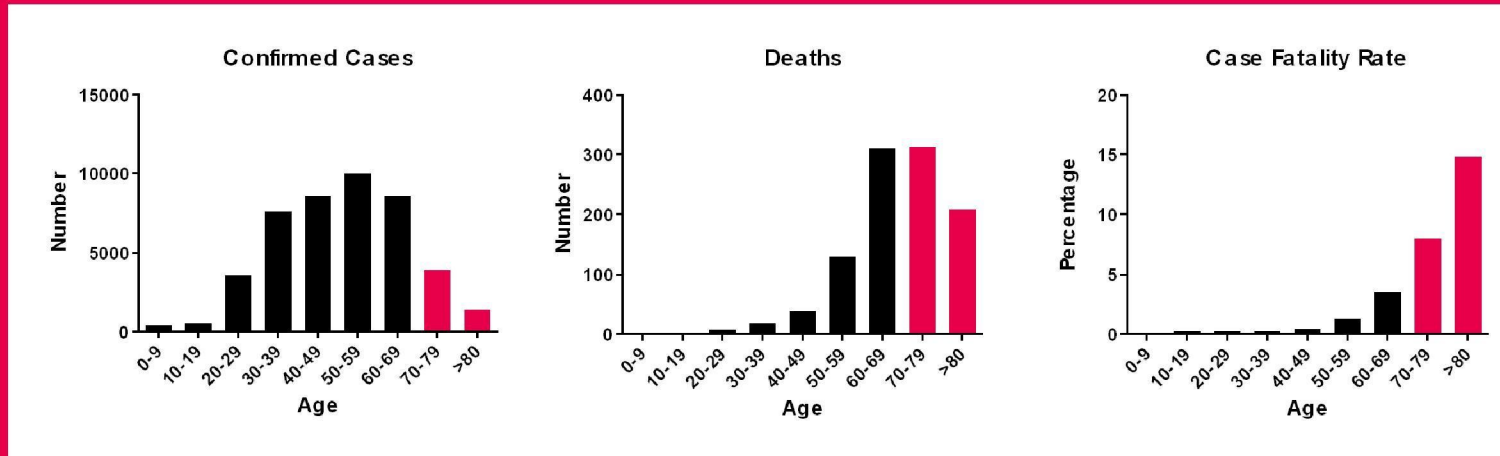
## COVID-19 is an emergent disease of aging

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# COVID-19 marks immune vulnerability at old age



Patients, deaths, and case fatality rates for 44,672 confirmed COVID-19 cases in Mainland China as of February 11, 2020

Source: *CCDC Weekly* / Vol. 2. Chinese Center for Disease Control and Prevention



## What is needed? -1-

### Problem:

In The Netherlands and across Europe, existing structures are not connected and funding is often temporary

### Solution:

Facilitate the development of a national – virtual – observatory supporting a community based cohort system

Facilitate European collaboration of national networks



## What is needed? -2-

### **The Netherlands**

- What
  - Existing cohorts should be brought together in a common effort to standardize data and extract information that will help ensure optimal prevention, protection and treatment
  - Databases of cohorts should be linked to RIVM, CBS, and hospital databases and registries
  - Strategic research and policy relevant agenda should be defined, agreed upon and funded (e.g. correlational studies, PoC studies, vaccine studies).
- How
  - A series of meetings and workshops between community-based cohorts and (immunology and virology) labs to discuss the establishment of the Netherlands Immunomics observatory



## Building upon the strenghts of Dutch initiatives and institutions



Tree Northern Provinces: Groningen, Friesland, Drenthe



**Netherlands Twin Register**

Twin and family research

Vrije Universiteit Amsterdam



**helius**

AMC Amsterdam, GGD Amsterdam – Health of Dutch of non-Dutch origin

←..... GoFair .....→

Means:

- Connect community-based cohort studies (CBCS) in The Netherlands
- Connect CBCS to RIVM, CBS, and hospital databases - GoFair
- Conduct correlational and PoC studies (A)
- Conduct vaccines studies (B)
- RVP

←..... The Trusted World of Corona .....→



National Institute for Public Health and the Environment  
Ministry of Health, Welfare and Sport

VEO (Versatile Emerging infectious disease Observatory)  
Zutphen Ouderen Studie  
Pienter



Sterftcijfers, doodsoorzaken, ziekenhuisopnames



**Sanquin**





## What is needed? -3-

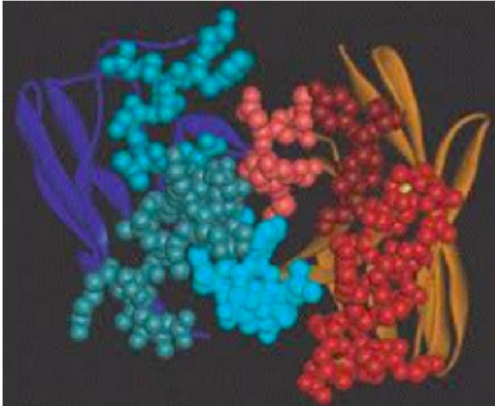
### Europe

- What
  - Existing cohorts should be brought together in a common effort to standardize data and extract information that will help ensuring optimal prevention, protection and treatment
  - Cohort readiness to adapt rapidly to future crises
- How
  - The Netherlands taking the lead on developing the European Observatory, together with Germany, France and Italy
  - Submitting Proposals to open EU Calls on COVID-19
  - Leading Governments advocating for establishment of European Observatory





## Establishing The European Observatory



Objective:

Create a European Platform to

- Respond effectively to pandemic crisis-situations
- Execute long term studies in elderly populations in order to better understand immune ageing and vaccine responsiveness (including COVID-19 vaccine, once licensed)
- Starting point is establishing the Netherlands Immune Observatory, based on:
  - Existing community-based cohorts
  - The National Vaccination Program (RVP) for > 60 years
  - Serology and Immunology labs



IN-LiMeS

**European  
Immunomics  
Observatory**



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## What we have done on COVID-19

Convene  
Advise  
Advocate

### Dutch knowledge institutions

- RIVM: [redacted], [redacted] and [redacted]  
[redacted], [redacted] and [redacted]
- Universities: UVA, VU, UMCU, Erasmus, UvG, UvL, LUMC, LU
- Sanquin

Meetings with COVID-19 special envoy

Mass media

## What we have done on COVID-19

Facilitate  
Participate

### Participant in COVID-19 proposals in The Netherlands (ZON-MW and Topsector LSH) – Submitted

- Netherlands Longitudinal Cohort Collaboration on COVID-19 (Erasmus, VU, UvG, Harvard)
- Intranasal Administration of Hyperimmunoglobulin against COVID-19 (UMCU, Erasmus, Sanquin, Harvard)
- The Trusted World of Corona (GoFair, TNO, LUMV, LU, Radboud MC, DTL Projects, Science and Technology BV, Euretos, Roche Nederland BV)

### Resource mobilisation and participant in call for proposals EU

- INCENTIVE - awarded
- FLOrENCE – submitted
- Networking of existing EU and international cohorts of relevance to COVID-19 (in preparation with Germany, Italy and /or France)



## First Results: convene, facilitate, broker and strategic adviser

- Facilitated discussions between and development of joint proposals by existing community-based cohort studies in The Netherlands
  - Rotterdam Studies
  - Lifelines
  - Twin Registry
  - Helius
- Created the basis for a national infrastructure that can
  - Respond quickly and effectively to new pandemic outbreaks
  - Provide a better understanding of immune ageing
  - Provide insights in the response to vaccines in elderly populations



Relevant stakeholders: Ministeries, Policy makers, Politicians, Academia, Industry

National Observatory:  
• Coordinate  
• Standardize and Curate  
• Aggregate  
• (International) collaborations  
• Communicate

Provide Inputs:  
• Epidemiology  
• Interventions  
• Therapeutic effectiveness  
• Vaccine trials  
• Predictive studies





# Who we are





## What we do

- Develop European Strategy for the Human Vaccines Project
  - Focus on Germany, The Netherlands, and EU Call for Proposals
- Develop strategy how The Netherlands can prepare itself better for future epidemic outbreaks: The Netherlands Immunomics Observatory (NIImO)
- Convener of Dutch knowledge institutions and participant in COVID-19 activities in The Netherlands (ZON-MW) – Submitted
- Resource mobilisation and participant in call for proposals
  - INCENTIVE (EU) - awarded
  - FLOrENCE (EU) – submitted
- Advocating for more funding for understanding and decoding the human immune system, with a focus on the elderly





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**Thank you**