Greek Precision Medicine Network on Cancer

Kostas Stamatopoulos
INAB | CERTH
the most excellent thing for the physician is to **cultivate prognosis**

for by **foreseeing and foretelling** he will be acquainted with the circumstances of the sick

*Hippocrates*
the good physician treats the disease

the great physician treats the patient who has the disease

William Osler, 1908
the essence of deductive reasoning
from the general to the particular
particular

synonyms
certain, detailed, exact
is medicine an exact science?
to a certain extent yes,
to a certain extent no

some parts are highly exact
others much less so

L. King, 1952
does medicine have the same degree of predictive accuracy as physics?

obviously, no

but whoever claimed that it did or should?

L. King, 1952
“Tonight I’m launching a new Precision Medicine Initiative to bring us closer to curing diseases like cancer and diabetes.

And to give us all access to the personalized information we need to keep ourselves and our families healthier.”

President Barack Obama
2015 State of the Union Address  January 20, 2015
**Precision medicine** is an emerging approach for disease prevention and treatment that takes into account people’s individual variations in genes, environment, and lifestyle.

The **time is right** because of:

- Sequencing of the human genome
- Improved technologies for biomedical analysis
- New tools for using large datasets
why precision medicine in cancer?
Noncommunicable diseases (NCDs) kill 40 million people each year, equivalent to 70% of all deaths globally.

Each year, 15 million people die from a NCD between the ages of 30 and 69 years.

Cardiovascular diseases, respiratory diseases, diabetes and cancer account for over 80% of all premature NCD deaths.

Detection, screening and treatment of NCDs, as well as palliative care, are key components of the response to NCDs.
GLOBAL ACTION PLAN
FOR THE PREVENTION AND CONTROL OF NONCOMMUNICABLE DISEASES
2013-2020
TOGETHER
WE CAN PREVENT AND CONTROL
THE WORLD'S MOST COMMON DISEASES

The challenge is unprecedented -- a 25% reduction by 2025 in premature deaths from noncommunicable diseases.
Critical factors in developing a national intersectoral action plan

- Inclusive process
- Practicality and reality
- Building on what is ongoing
- Prioritize activities
- Balanced and evidence based content
- Resource planning

National Multisectoral NCD Action Plan
Critical steps in developing a national intersectoral action plan

1. Mobilize commitment and resources
2. Conduct situation analysis
3. Map and engage internal and external stakeholders
4. Determine priorities, targets, roles and cost
5. Prepare the draft action plan
6. Disseminate and revise
7. Obtain endorsement of the plan
Greek Precision Medicine Network on Cancer
what do we want to achieve?
The best available diagnostics – using next-generation sequencing technologies

Precision medicine – the right treatment to the right patient

Through a national effort offer equal care independent of healthcare region

Build a unique research resource
metrics and timeline

5.4 M for 2018-2020

4 Units
- 7 research centers
- 4 universities

9 different disciplines (so far)

Phase A M1-M6
Phase B M7-M24
strategy
Critical components to precision medicine

- Biodata
- Real world evidence
- Implementation science
Collaboration between academia, healthcare and industry

Closer cooperation between diagnostics labs and treatment clinics, clinical trial units, pharma and biotech industry

Streamlined IT infrastructure

Clinical interpretation teams

Excellent pilot studies!
Phase A

M1-M6

standardization

interlaboratory

quality control

Networking

national | pMED-GR

international
## Links to European initiatives

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<tr>
<th>COUNTRY</th>
<th>COMPANY/INSTITUTION</th>
<th>TIME</th>
<th>SCOPE</th>
<th>FUNDING</th>
<th>PROGRESS</th>
<th>MEDICAL FOCUS</th>
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<tbody>
<tr>
<td>ENGLAND</td>
<td>Genomics England Ltd. (GeL)</td>
<td>2013-2018</td>
<td>100,000 genomes</td>
<td>£411 M</td>
<td>~34,000 genomes</td>
<td>Rare Diseases, Cancer</td>
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<tr>
<td>SCOTLAND</td>
<td>The Scottish Genomes Partnership (SGP)</td>
<td>2015-perpetual</td>
<td>~3,000 genomes</td>
<td>£23 M</td>
<td>~3,000 genomes</td>
<td>Rare Diseases, Cancer, Population Studies</td>
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<td>THE NETHERLANDS</td>
<td>Hartwig Medical Foundation (HMF)</td>
<td>2015-2017</td>
<td>&gt;10,000 cancer patients</td>
<td>€30 M</td>
<td>~3,000 patients</td>
<td>Cancer</td>
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<td>FRANCE</td>
<td>France Medécine Genomique (AVIESAN)</td>
<td>2015-2025</td>
<td>235,000 WGS/annum by 2020</td>
<td>€670 M (-2020)</td>
<td>Two platforms selected</td>
<td>Rare Diseases, Cancer</td>
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<tr>
<td>IRELAND</td>
<td>Genomics Medicine Ireland (GMI)</td>
<td>2016-perpetual</td>
<td>45,000 genomes</td>
<td>$40 M</td>
<td>Incorporated Series A</td>
<td>Population studies, Rare Diseases</td>
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<td>SWITZERLAND</td>
<td>Swiss Personalized Health Network (SPHN)</td>
<td>2017-2020</td>
<td>Informatics structure</td>
<td>CHF 68</td>
<td>Funding calls</td>
<td>Rare Diseases, Cancer, Infectious Diseases, Rare Diseases, Cancer</td>
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<td>FINLAND</td>
<td>Finland’s Genome Strategy (FGS)</td>
<td>2017-2020</td>
<td>National infrastructure</td>
<td>€17 M (Request for €50 M)</td>
<td>Planning phase</td>
<td>Pharmacogenetics, Genetic Risk Susceptibility, Rare Diseases, Cancer, Infectious Diseases, Rare Diseases, Cancer, Diabetes, Companion Dx, Rare Diseases, Cancer, Complex Disease, Microbiome</td>
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<tr>
<td>NORWAY</td>
<td>The Norwegian Strategy for Personalised Medicine in Healthcare</td>
<td>2017-2021</td>
<td>&lt;13,000 WGS/annum</td>
<td>NOK 8 M (pre-analysis)</td>
<td>Planning phase</td>
<td>Rare Diseases, Cancer, Infectious Diseases, Rare Diseases, Cancer, Diabetes, Companion Dx, Rare Diseases, Cancer, Complex Disease, Microbiome</td>
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<tr>
<td>DENMARK</td>
<td>National Strategy for Personalized Medicine (Per Med)</td>
<td>2017-2020</td>
<td>~100,000 genomes</td>
<td>DKK 5 M (pre-analysis) DKK 100 M</td>
<td>Initiated</td>
<td>Rare Diseases, Cancer, Diabetes, Companion Dx, Rare Diseases, Cancer, Complex Disease, Microbiome</td>
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<tr>
<td>SWEDEN</td>
<td>Genomic Medicine Sweden</td>
<td>2017-2023</td>
<td>~25,000 genomes/annum</td>
<td>SEK 4 M (pre-analysis)</td>
<td>Planning phase</td>
<td>Rare Diseases, Cancer, Complex Disease, Microbiome</td>
</tr>
</tbody>
</table>

**Links to European initiatives**

Cyprus, Serbia, Slovenia, Hungary, Czech Republic
next steps
Phase B

state-of-the-art
NGS-based
diagnosis

translational research

the entire national health ecosystem as a potential ‘customer’ and biodata provider
the entire national health ecosystem as a potential ‘customer’ and biodata provider
a secret for success?
collaborate and involve all relevant stakeholders
Medicine is of all the Arts the most noble
but, owing to the ignorance of those who
practice it, and of those who,
inconsiderately, form a judgment of them, it
is at present behind all the arts

Hippocrates
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