Pharma’s expectations from FinnGen: Pfizer as an example

Jaakko Parkkinen
Lääketieteellinen johtaja
Pfizer

Pfizer Kehitys on vasta alkanut.

Why Pharma is interested in Human Genetics?

- Need to speed up the discovery of new drugs
- Need to mitigate the risk of late failures in drug development

- Getting insight into pathways underlying human disease
- Identifying potential new drug targets
- Getting information with human relevance in early-stage drug development
- Predicting efficacy and safety of modulating a selected therapeutic target before clinical trials

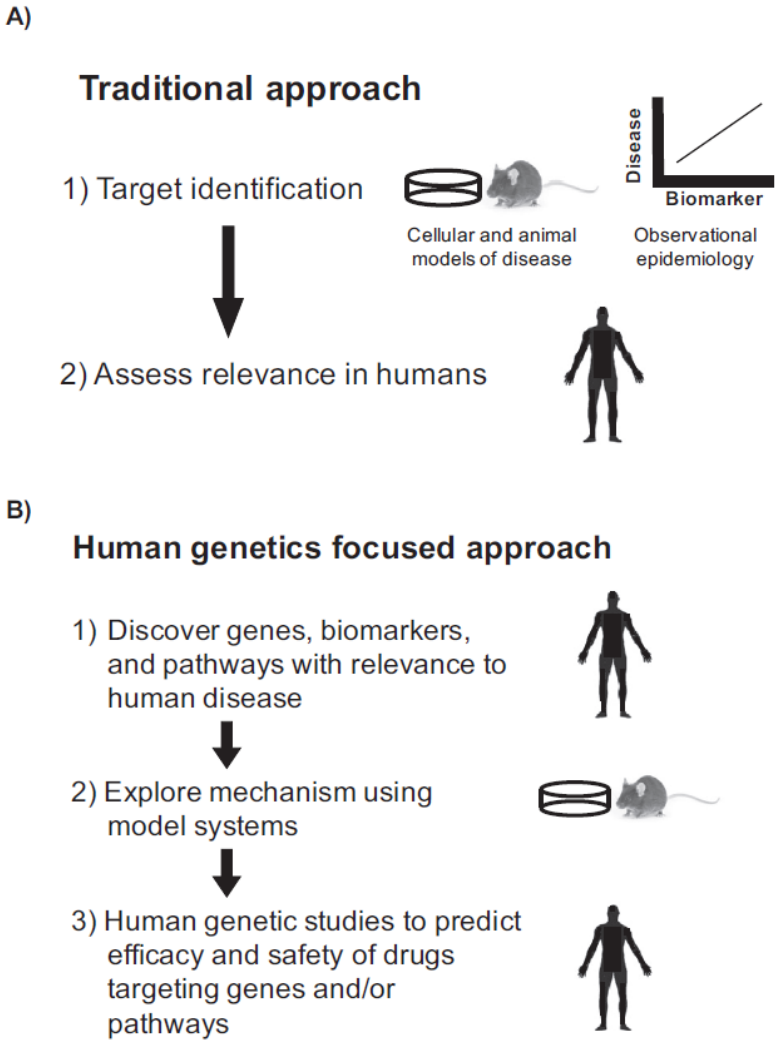
Nosengo N. Nature 2016; 534:314-6

How Human Genetics can guide drug discovery?

Available online at www.sciencedirect.com
ScienceDirect
www.elsevier.com/locate/tcm

Leveraging human genetics to guide drug target discovery

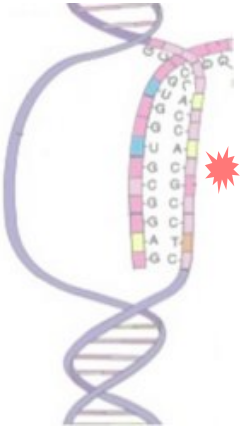
Nathan O. Stitziel, MD, PhD[a,b,c,], and Sekar Kathiresan, MD[d,e,f,g,**]*



Stitziel NO, Kathiresan S. Trends Cardiovasc Med. 2017; 27:352-9

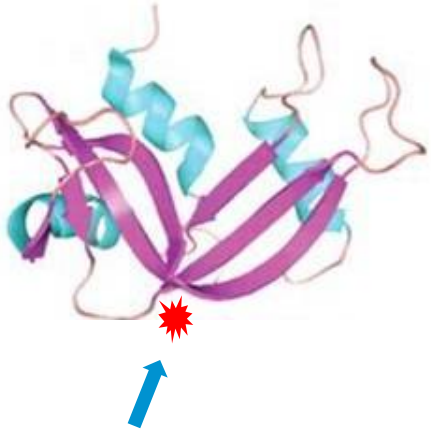
How Human Genetics can predict drug effects?

Genetic variant



E.g. Loss-of-function mutation

Protein



Potential drug target?
Develop an inhibitory drug

Health outcome

E.g. Protection against cardiovascular disease

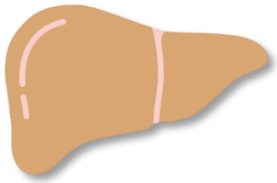
Are there other clinical endpoints associated with the same genetic variant?
- Potential adverse drug reactions

Example: Nonalcoholic Steatohepatitis

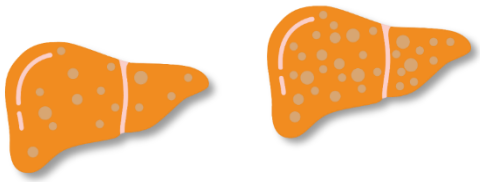
WHAT IS NASH?

Nonalcoholic steatohepatitis (NASH) is a more serious form of non-alcoholic fatty liver disease (NAFLD) which is caused by excessive accumulation of fat in the liver. With NASH, the fatty liver leads to inflammation in the liver and liver injury.

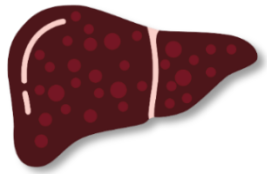
Nonalcoholic Fatty Liver (NAFL) → **Non-Alcoholic Steatohepatitis** (NASH) → **Cirrhosis**



Fatty Liver Disease starts with a **build-up of fat in the liver**



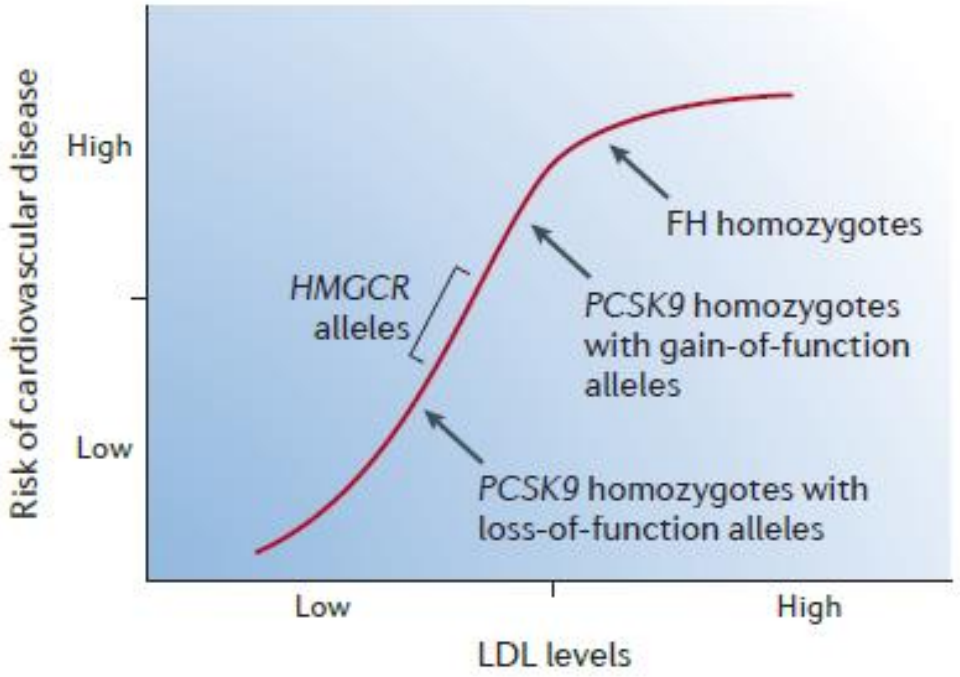
Some people with fatty liver develop NASH, a progressive condition, where a buildup of fat leads to inflammation and injury in the liver



This **can advance to cirrhosis**, a serious condition that can entail permanent liver failure

Validating therapeutic targets through human genetics

Robert M. Plenge[1,2], Edward M. Scolnick[2,3] and David Altshuler[2,4,5]



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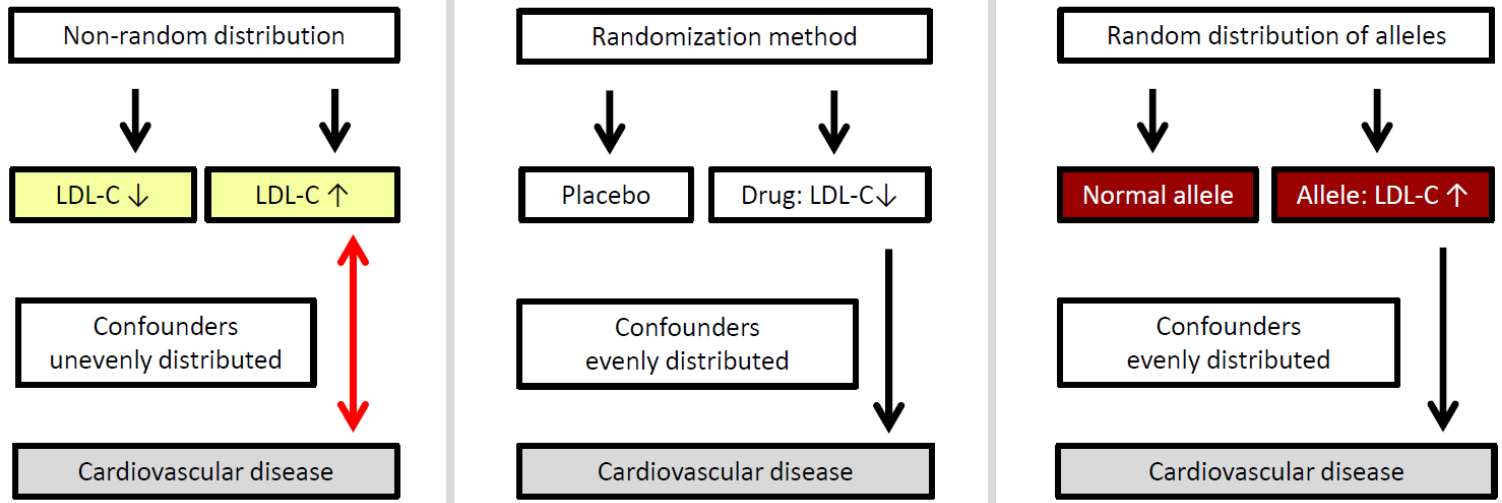
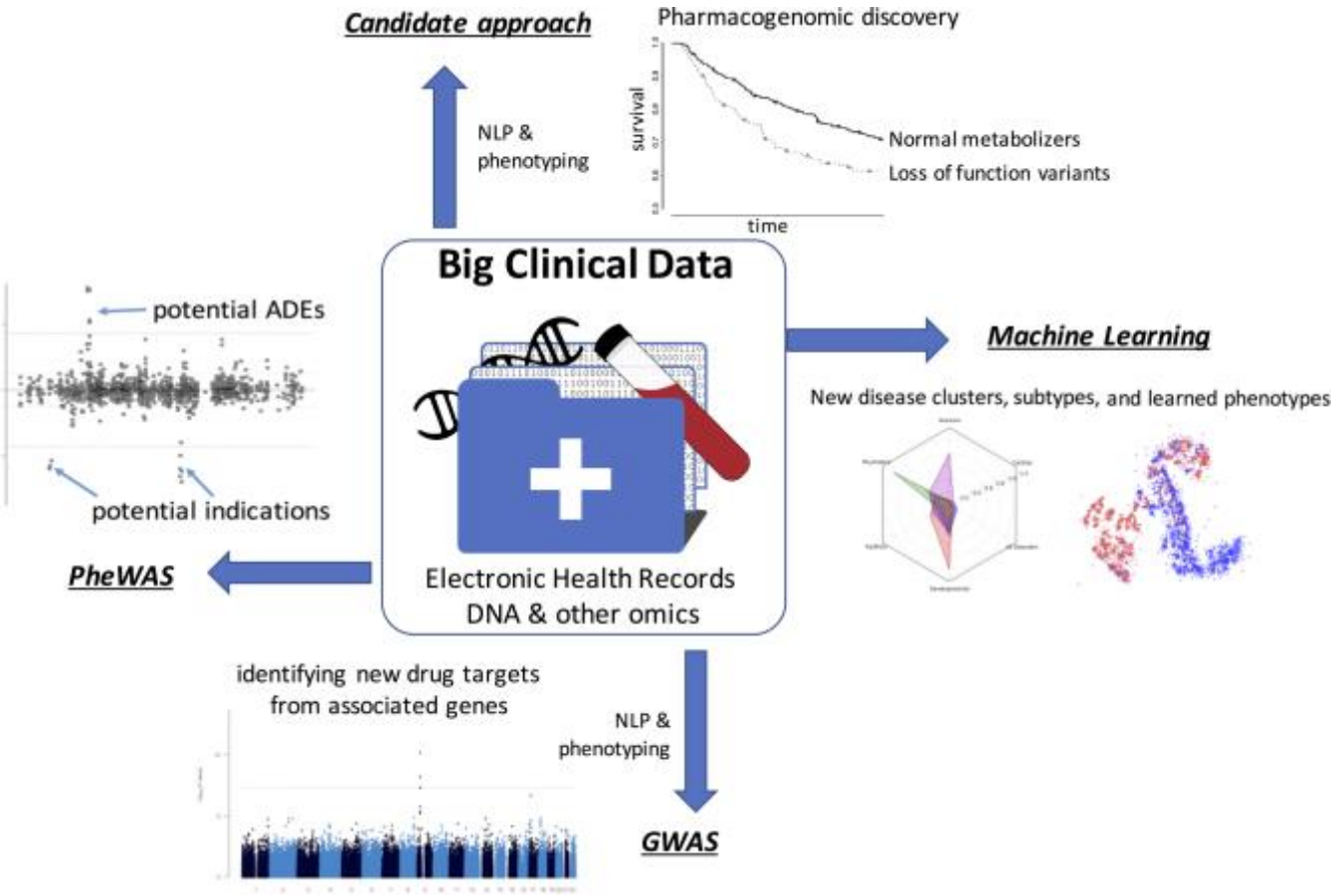
Comparison of observational studies, randomized trials, and Mendelian randomization studies to help understand causality from a risk factor



Pfizer *Kehitys on vasta alkanut.*

Benn M, Nordestgaard BG. Cardiovasc Res. 2018 Feb 19.
https://doi.org/10.1093/cvr/cvy045

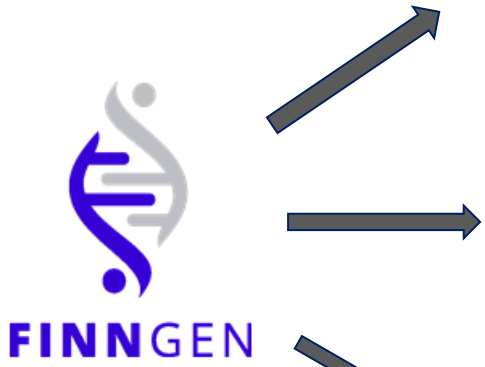
The Influence of Big (Clinical) Data and Genomics on Precision Medicine and Drug Development



Pfizer Kehitys on vasta alkanut.

Clinical Pharmacology & Therapeutics
Volume 103, Issue 3, pages 409-418, 5 FEB 2018 DOI: 10.1002/cpt.951
http://onlinelibrary.wiley.com/doi/10.1002/cpt.951/full#cpt951-fig-0001

FinnGen benefits drug development, patients and healthcare



Investigational drugs developed against genetically characterized targets more likely to succeed in clinical trials

Patients participating in clinical trials more likely to benefit from the investigational drug

Genomic data generated is returned to the biobanks for the benefit of patients, personalized medicine and further research


Hekään eivät syntyessään tienneet mistä kaikesta voivat selvitä.
Kehitys on vasta alkanut.
Pfizer