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NORDIC Biobank Conference
6–8 sept 2022
Current trends and challenges in the Nordic countries.
#nordicbiobank2022
The Nordic Biobank Conference 2022 is jointly organized by the Nordic countries, comprised of Denmark, Finland, Iceland, Norway and Sweden.

PEA assay in combination with NGS for high-throughput proteome-wide analysis in large population health and biobank studies

Cynthia Lawley, PhD
Director, Population Health

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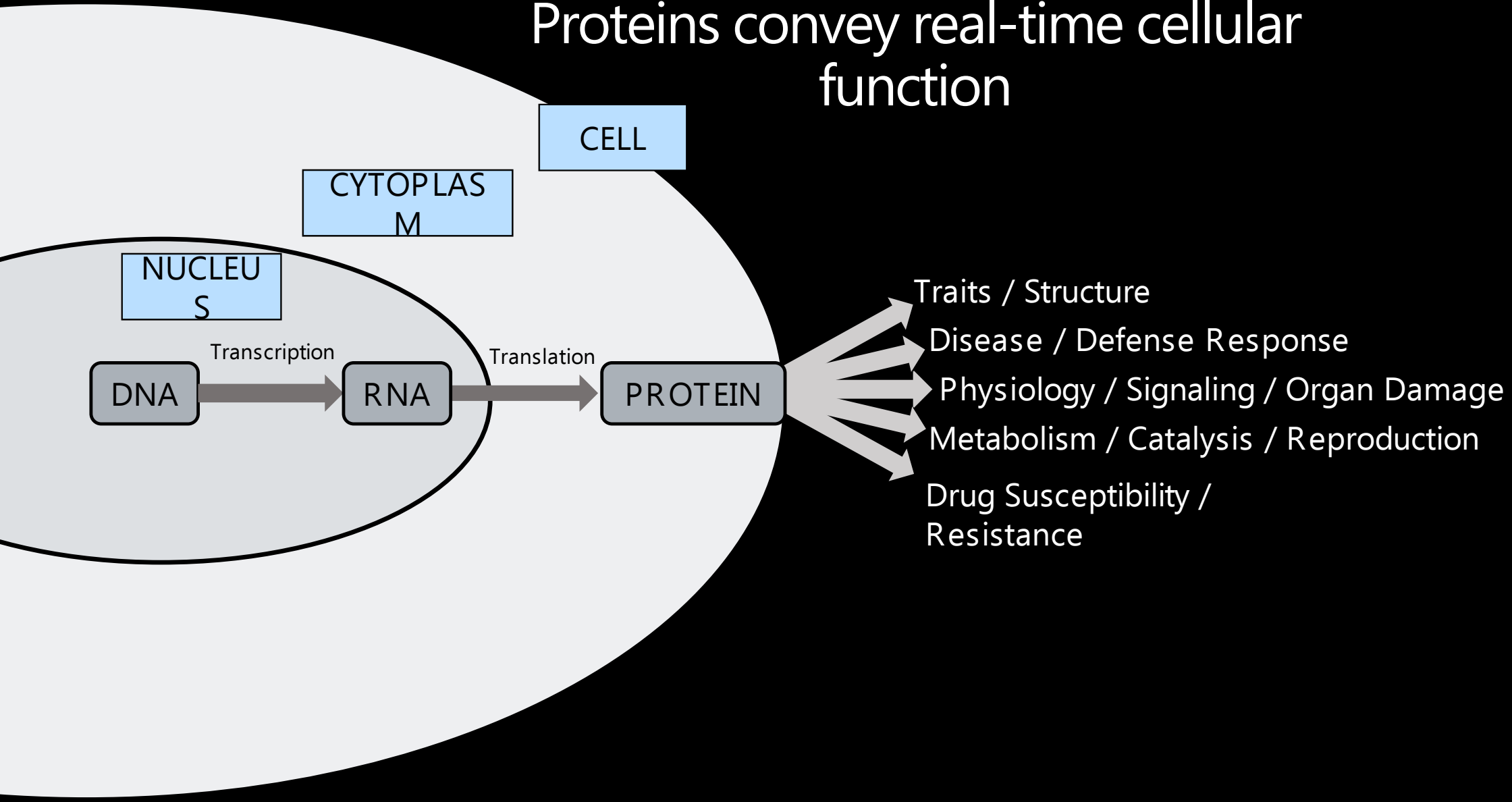
Proteins convey real-time cellular function



Adapted from: Cowen and Company, Life Science Toolkit 12th edition, February 2020 and https://hpajourney.proteinatlas

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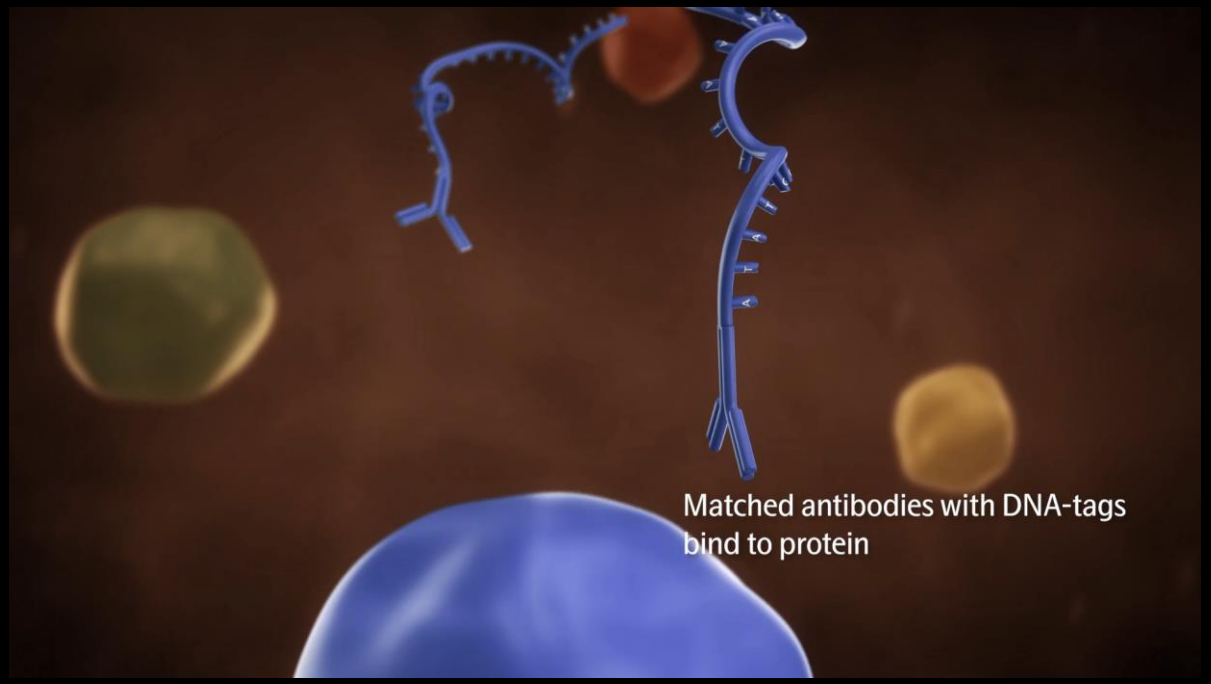
The Platform: Proximity Extension Assay



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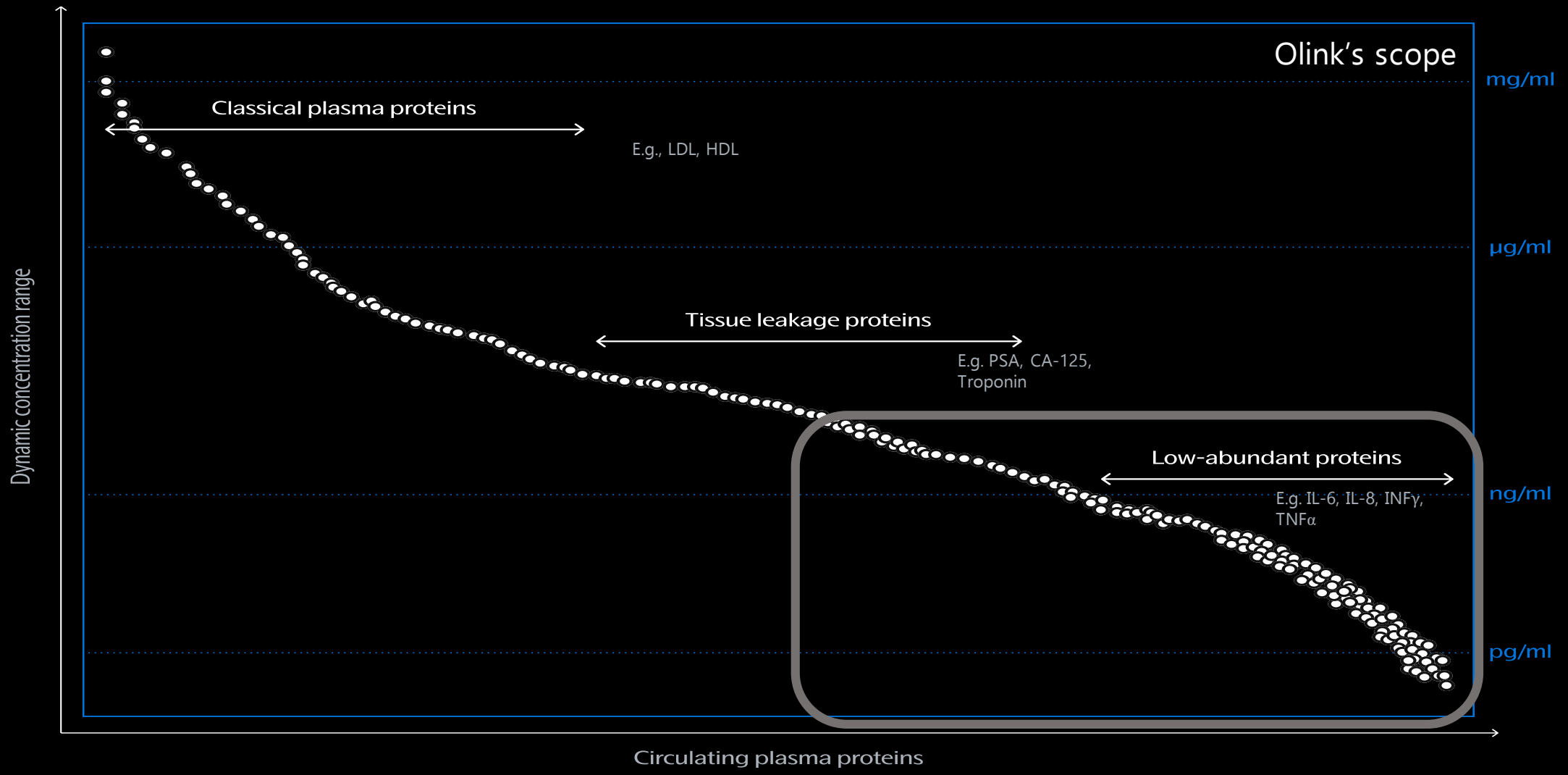
Covering the broad range of the plasma proteome



biobank uk
Enabling scientific discoveries that improve human health

The Pharma Proteomics Project

Proteins circulating in our blood may play a role in the development of many life-threatening diseases.

A greater understanding of such markers offers opportunities for more precise, targeted treatment.

Genentech
Biogen
Bristol Myers Squibb
AMGEN
AstraZeneca
REGENERON
gsk
Pfizer
Takeda
Janssen
Johnson & Johnson

cindy.lawley@olink.com

Pharma Proteomics Project

Takeda

JSC: **Erin Smith**

Biogen

Consortium chair:
Christopher Whelan

Alnylam PHARMACEUTICALS

JSC: **Luke Ward**

REGENERON
SCIENCE TO MEDICINE

JSC: **Lyndon Mitnaul**

AMGEN

JSC: **Kári Stefánsson**
Bradford Gibson

Pfizer

JSC: **Melissa Miller**

AstraZeneca

JSC: **Slavé Petrovski**

novo nordisk

JSC: **Joanna Howson**

Bristol Myers Squibb

JSC: **Joe Szustakowski**

JSC: **Letizia Goretti**

janssen
Johnson & Johnson

JSC: **Robert Scott**

JSC: **Mark McCarthy**

JSC: **Eugene Melamund**

Calico

gsk
GlaxoSmithKline

Genentech
A Member of the Roche Group

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bioRxiv preprint: UK Biobank Pharma Proteomics Project

First ~1500 proteins of the Explore 3072, >10,200 pQTLs

Genetic regulation of the human plasma proteome in 54,306 UK Biobank participants

Benjamin B. Sun[1], Joshua Chiou[2*], Matthew Traylor[3*], Christian Benner[4*], Yi-Hsiang Hsu[5*], Tom G. Richardson[3*], Praveen Surendran[6*], Anubha Mahajan[4*], Chloe Robins[7*], Steven G. Vasquez-Grinnell[8*], Liping Hou[9*], Erika M. Kvikstad[8*], Oliver S. Burren[10], Madeleine Cule[11], Jonathan Davitte[7], Kyle L. Ferber[12], Christopher E. Gillies[13], Åsa K. Hedman[14], Sile Hu[3], Tinchi Lin[15], Rajesh Mikkilineni[16], Rion K. Pendergrass[4], Corran Pickering[17], Bram Prins[10], Anil Raj[11], Jamie Robinson[1], Anurag Sethi[11], Lucas D. Ward[18], Samantha Welsh[17], Carissa M. Willis[18], Alnylam Human Genetics, AstraZeneca Genomics Initiative, Biogen Biobank Team, Bristol Myers Squibb, Genentech Human Genetics, GlaxoSmithKline Genomic Sciences, Pfizer Integrative Biology, Population Analytics of Janssen Data Sciences, Regeneron Genetics Center, Lucy Burkitt-Gray[17], Mary Helen Black[9], Eric B. Fauman[2], Joanna M. M. Howson[3], Hyun Min Kang[13], Mark I. McCarthy[4], Eugene Melamud[11], Paul Nioi[18], Slavé Petrovski[10,19], Robert A. Scott[6], Erin N. Smith[20], Sándor Szalma[20], Dawn M. Waterworth[21], Lyndon J. Mitnaul[13], Joseph D. Szustakowski[8#], Bradford W. Gibson[22#], Melissa R. Miller[2#], Christopher D. Whelan[1#]

*These authors contributed equally. The ordering was randomly determined.
#These authors jointly directed the work.

https://www.biorxiv.org/content/10.1101/2022.06.17.496443v1

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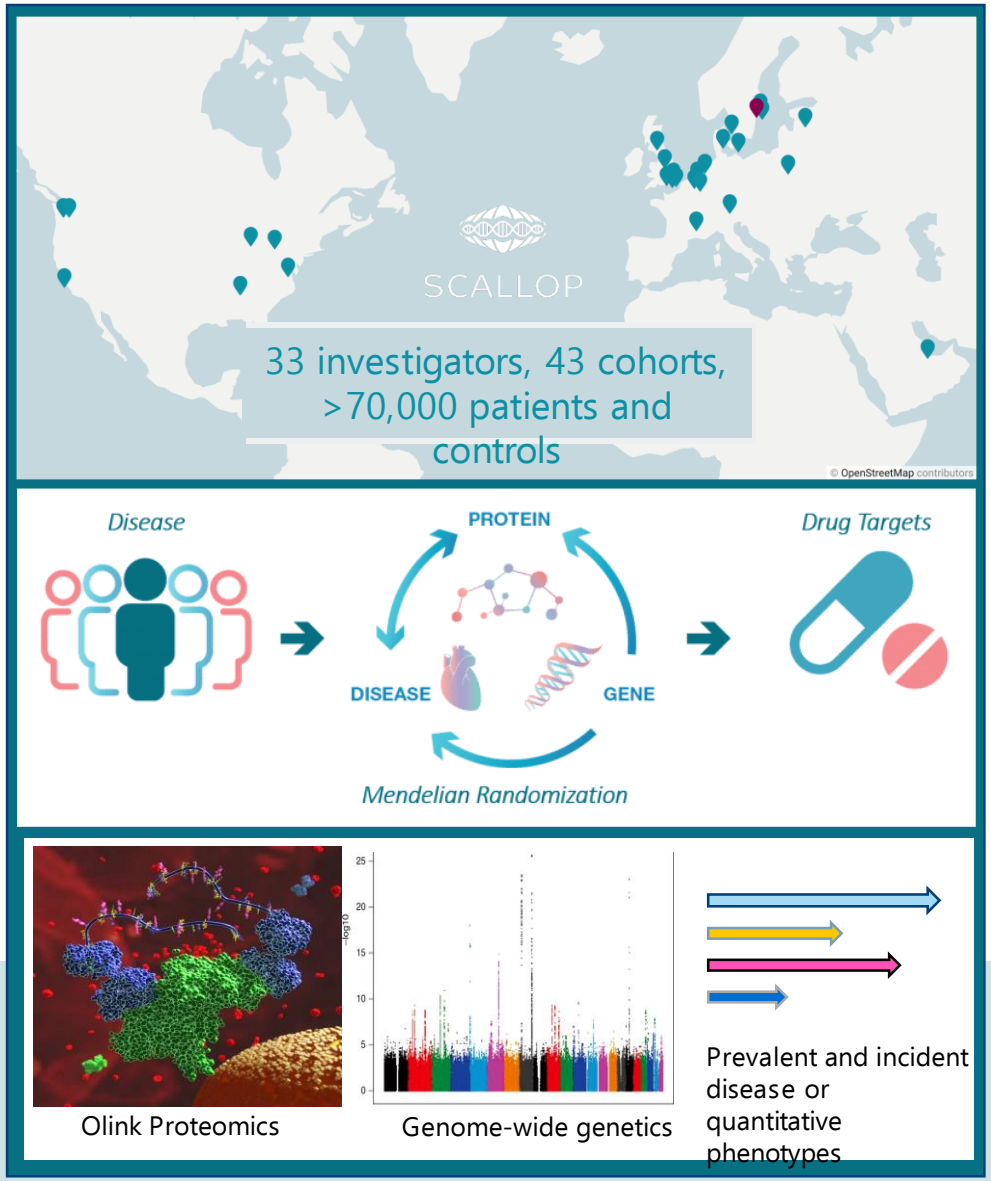
SCALLOP

Systematic and Combined AnaLysis of Olink Proteins



Anders Malarstig, SCALLOP chair, Senior Researcher, Karolinska Institute & Director, Target Sciences, Pfizer WRDM
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www.scallop-consortium.com
https://www.olink.com/scallop

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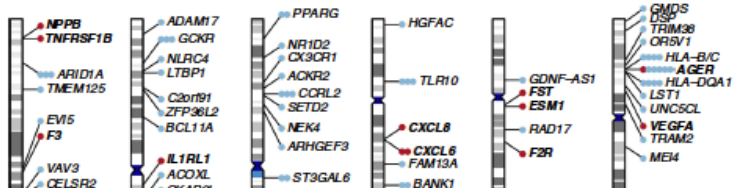
pQTLs



nature metabolism

ARTICLES

https://doi.org/10.1038/s42255-020-00287-2

Check for updates

Genomic and drug target evaluation of 90 cardiovascular proteins in 30,931 individuals

Lasse Folkersen[1,2,3,66], Stefan Gustafsson[3,4,66], Qin Wang[3,5,6,66], Daniel Hvidberg Hansen[3,7], Åsa K. Hedman[1,3,8], Andrew Schork[3,9,10], Karen Page[3,11], Daria V. Zhernakova[3,12], Yang Wu[3,13], James Peters[3,14,15,16], Niclas Eriksson[3,17], Sarah E. Bergen[3,18], Thibaud S. Boutin[3,19], Andrew D. Bretherick[3,19], Stefan Enroth[3,20], Anette Kalnapenkis[3,21,22], Jesper R. Gådin[1,3], Bianca E. Suur[3,23], Yan Chen[1,3], Ljubica Matic[3,23], Jeremy D. Gale[3,24], Julie Lee[3,11], Weidong Zhang[3,25], Amira Quazi[3,11], Mika Ala-Korpela[3,5,6,26], Seung Hoan Choi[3,27], Annique Claringbould[3,12], John Danesh[3,14,15,28,29,30,31], George Davey Smith[3,32], Federico de Masi[3,7], Sölve Elmståhl[3,33], Gunnar Engström[3,33], Eric Fauman[3,34], Celine Fernandez[3,33], Lude Franke[3,12], Paul W. Franks[3,35], Vilmantas Giedraitis[3,36], Chris Haley[3,19], Anders Hamsten[1,3], Andres Ingason[3,9], Åsa Johansson[3,20], Peter K. Joshi[3,37], Lars Lind[3,38], Cecilia M. Lindgren[3,27,39,40], Steven Lubitz[3,27,41], Tom Palmer[3,42], Erin Macdonald-Dunlop[3,37], Martin Magnusson[3,43,44,45], Olle Melander[3,33], Karl Michaelsson[3,46], Andrew P. Morris[3,40,47,48], Reedik Mägi[3,21], Michael W. Nagle[3,34], Peter M. Nilsson[3,33], Jan Nilsson[3,33], Marju Orho-Melander[3,49], Ozren Polasek[3,50], Bram Prins[3,14,15], Erik Pålsson[3,51], Ting Qi[3,13], Marketa Sjögren[3,33], Johan Sundström[3,52,53], Praveen Surendran[3,14,15,28,54], Urmo Võsa[3,21], Thomas Werge[3,9], Rasmus Wernersson[3,7], Harm-Jan Westra[3,12], Jian Yang[3,13,55,56], Alexandra Zhernakova[3,12], Johan Ärnlöv[3,57], Jingyuan Fu[3,12,58], J. Gustav Smith[3,44,59], Tõnu Esko[3,21,27], Caroline Hayward[3,19], Ulf Gyllensten[3,20], **Mikael Landen**[3,51], Agneta Siegbahn[3,60], James F. Wilson[3,19,37], Lars Wallentin[3,61], Adam S. Butterworth[3,14,15,28,29,30], Michael V. Holmes[3,62,63,66], Erik Ingelsson[3,64,66] and Anders Mälarstig[1,3,65,66] ✉

Target validation
CASP-8: breast cancer
CD40: IBD, RA
DKK1: eBMD
IL-1RA: RA
IL-6RA: RA, CHD
ST2: asthma
TRAIL-R2: prostate cancer
TRANCE: eBMD

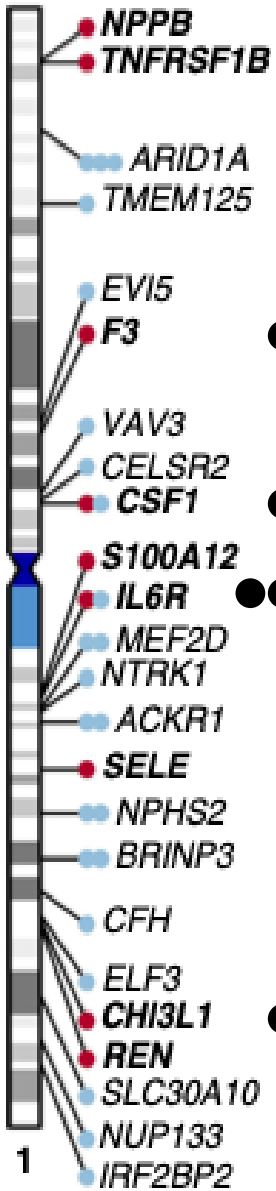
New target candidates
EGF: SCZ, eBMD
IL-16: 2-h glucose
PAPPA: T2D
SPON1: Afib
TF: HbA1c

Repositioning
& target-mediated safety
(latter denoted by *)

ADM: WHR
CASP-8: asthma*
CD40: stroke*
CHI3L1: AFib
CSF: WHR, eBMD
CX3CL1: fracture, SLE
CXCL16: IBD
FAS: IBD
GDF-15: HDL-C
HGF: triglycerides
IL-1RA: total cholesterol*
IL-6RA: asthma, eczema*
IL-6RA: AFib
IL18: eBMD
MMP-12: eczema
PIGF: CHD, eBMD
RAGE: lipids, BMI, T2D, prostate cancer, SCZ
ST2: IBD*

Folkersen et al. 2020 Genomic and drug target evaluation of 90 cardiovascular proteins in 30,931 individuals. *Nat Metab* **22,** 1135-1148
https://doi.org/10.5281/zenodo.2615265

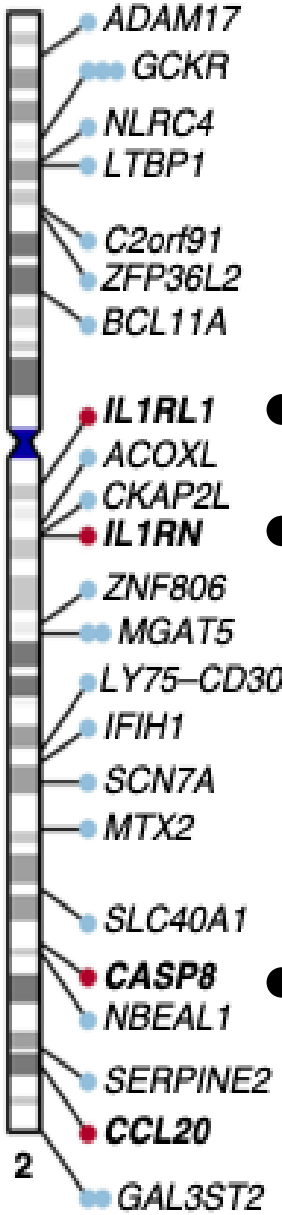
Chromosome 1: Mendelian Randomization Results: Validated, Novel and Repurposing Opportunities



- Novel for F3: HbA1c
- Repurpose for CSF1: WHR, eBMD
- Validated for IL6R: RA, CHD eg Tocilizumab
- Repurposed for IL6R: Asthma, Eczema, Afib
- Repurpose for CHI3L1: Afib

Folkersen et al 2020 Nature Metabolism https://www.nature.com/articles/s42255-020-00287-2

Chromosome 2: Mendelian Randomization Results: Validated, Novel and Repurposing Opportunities



- Validated for IL1RL1: Asthma
  - Repurpose for IL1RL1: IBD
- Validated for IL1RN: RA eg, Anakinra
  - Repurpose for IL1RN: Total cholesterol
- Validated for CASP8: Breast cancer
  - Repurpose for CASP8: Asthma

Folkersen et al 2020 Nature Metabolism https://www.nature.com/articles/s42255-020-00287-2

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Customers taking Olink discoveries to the clinic

Olink Focus
Multiple Sclerosis

Octave Biosciences

Olink Focus
Inflammatory Bowel Disease

Crohn's and Colitis Foundation

**Institute for Clinical and Economic Review. Final Evidence Report – DMTs for RRMS and PPMS. March 6, 2017. [PDF]*

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Olink Focus Multiple Sclerosis	Olink Focus Inflammatory Bowel Disease
Octave Biosciences	Crohn's and Colitis Foundation
MS: 2nd ranked chronic condition in pp lifetime med costs in US >$4M*	IBD: Estimated $1.2M per 50 patient years

**Institute for Clinical and Economic Review. Final Evidence Report – DMTs for RRMS and PPMS. March 6, 2017. [PDF]*

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Monitoring disease progression/ response to therapy	Predict complications of IBD at inception/diagnosis

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Monitoring disease progression/ response to therapy	Predict complications of IBD at inception/diagnosis
Series B $32M	Launch of IBD Ventures

**Institute for Clinical and Economic Review. Final Evidence Report – DMTs for RRMS and PPMS. March 6, 2017. [PDF]*

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Thank you!

Questions:
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support@olink.com