

>>Genteknologi

Når {livet} kan
omprogrammeres

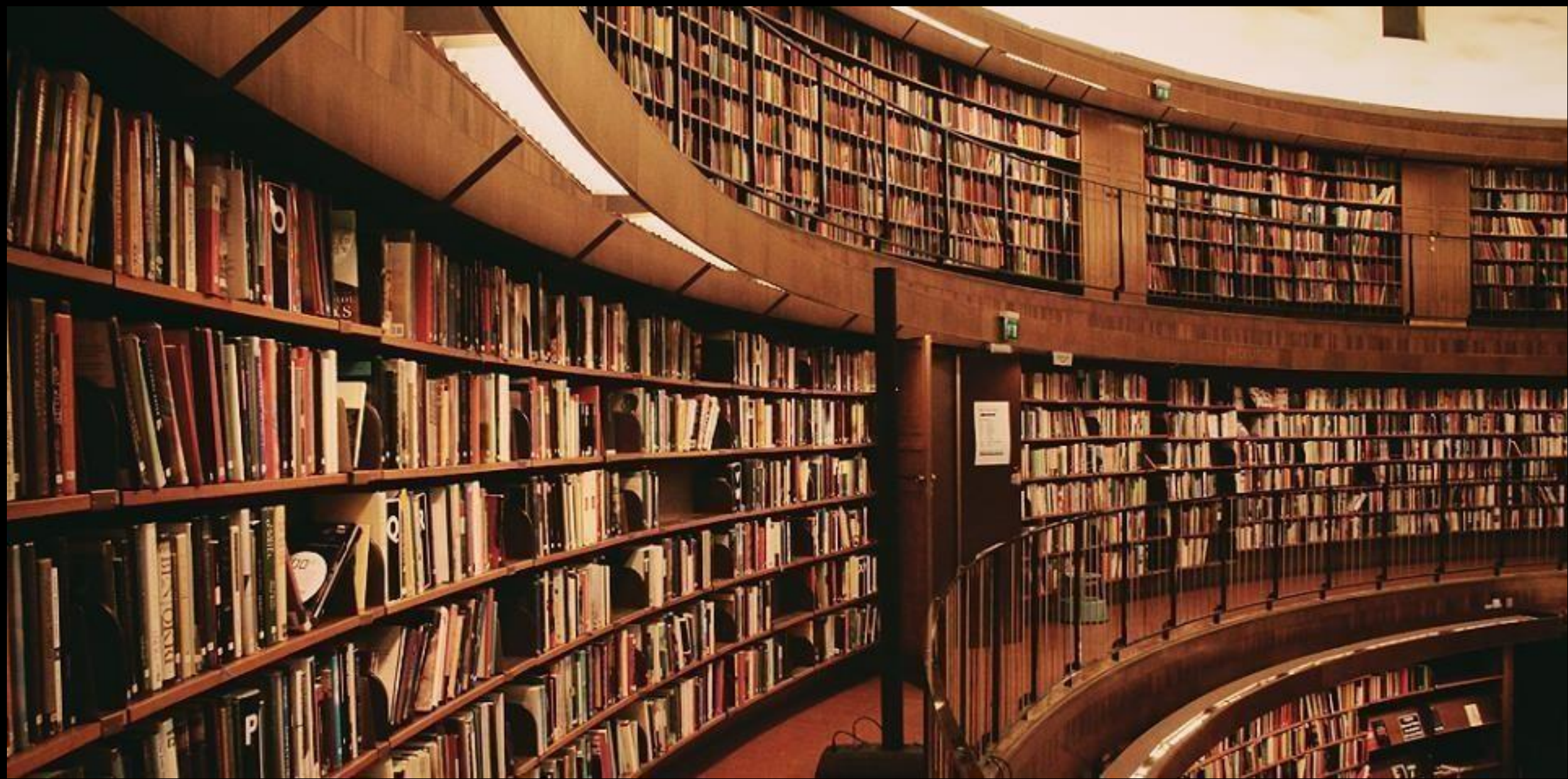




**Lese, skrive og
redigere DNA**



Lese DNA



GENOME SEQUENCING



Reduced!
\$1,000

Skrive DNA





Redigere DNA



Growing two-dimensional
beams p. 1468 & 1513

Managing biological
risk p. 1477

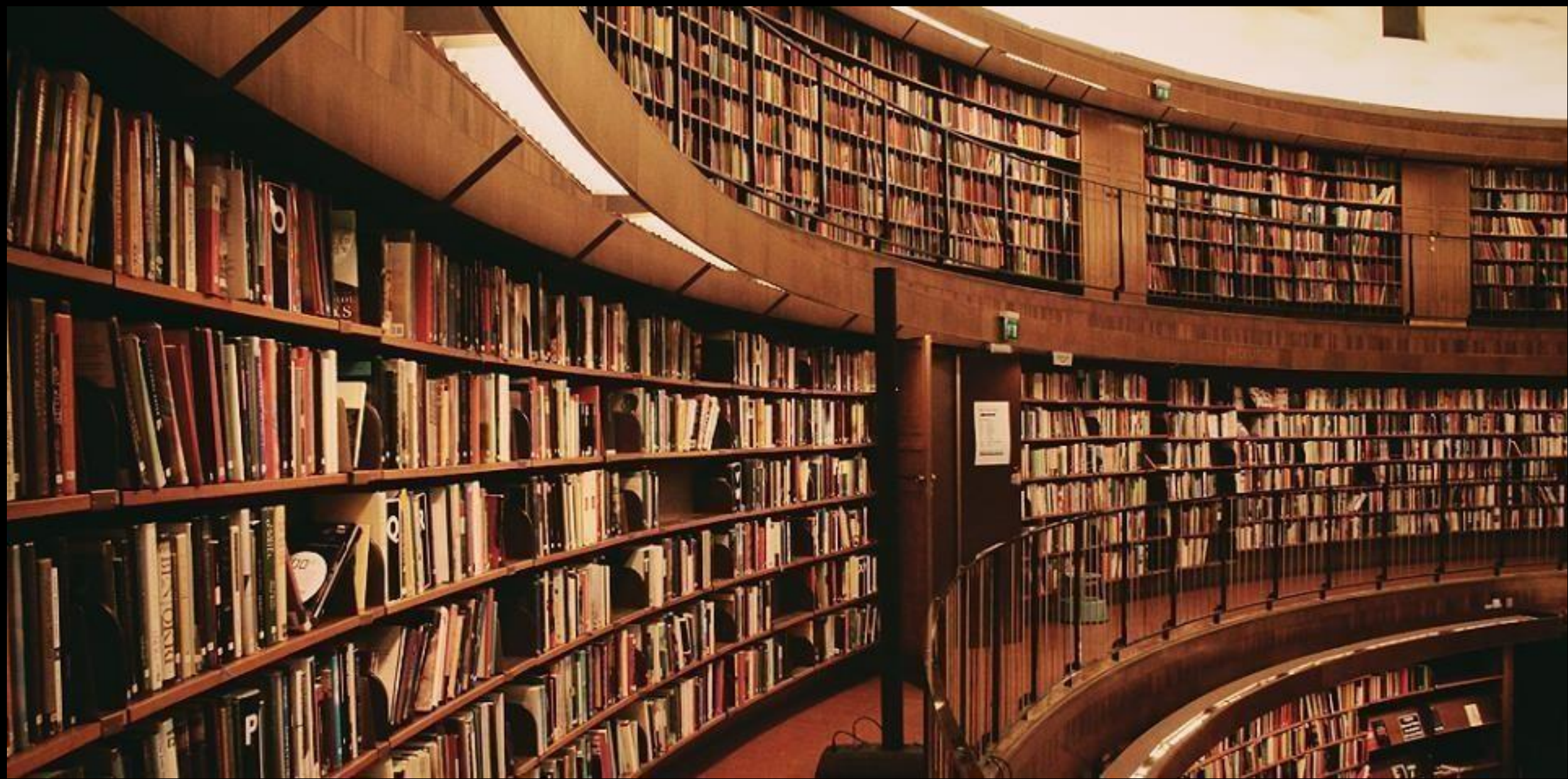
Algal toxin alters spatial
memory p. 1548

Science

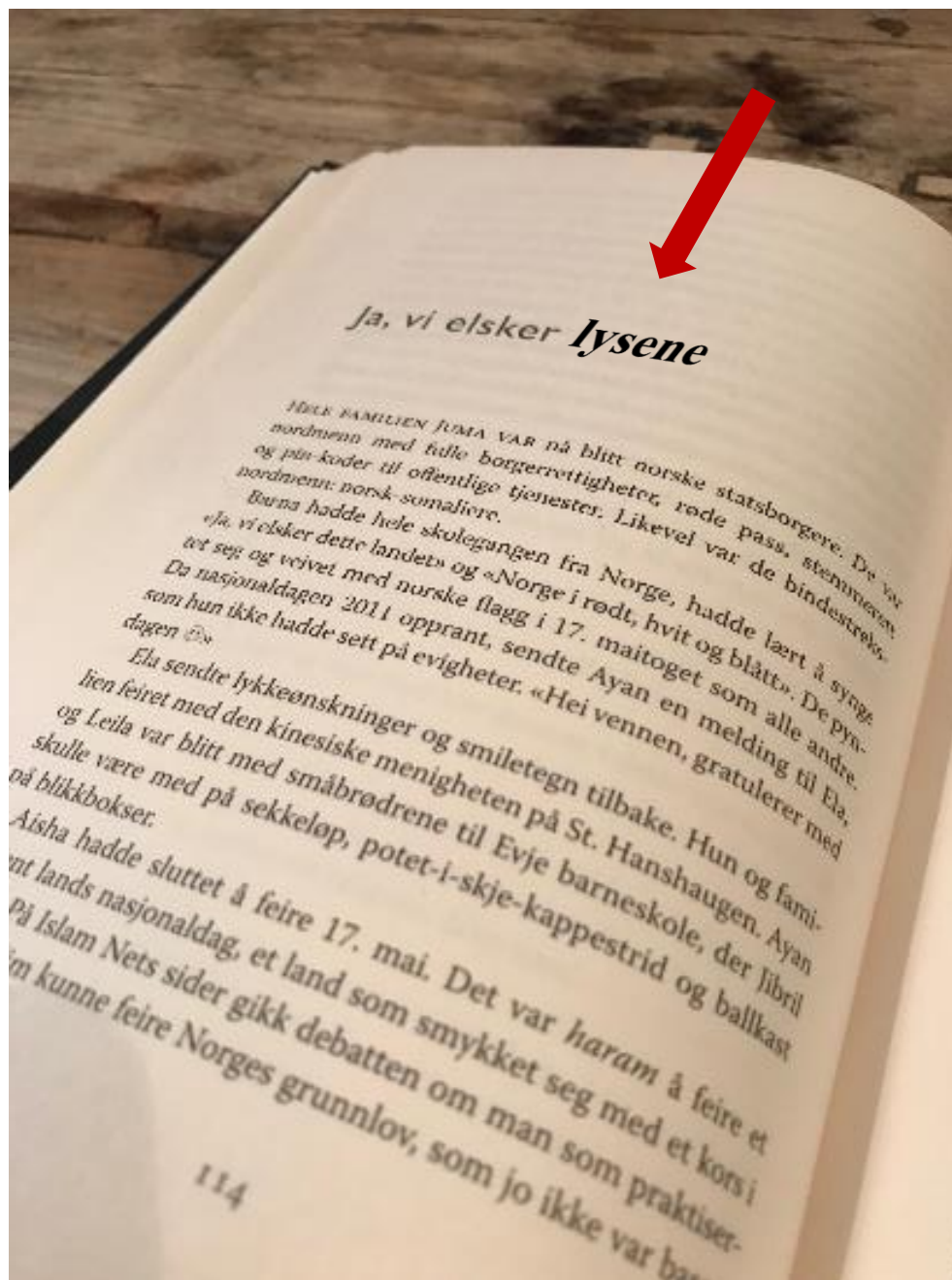
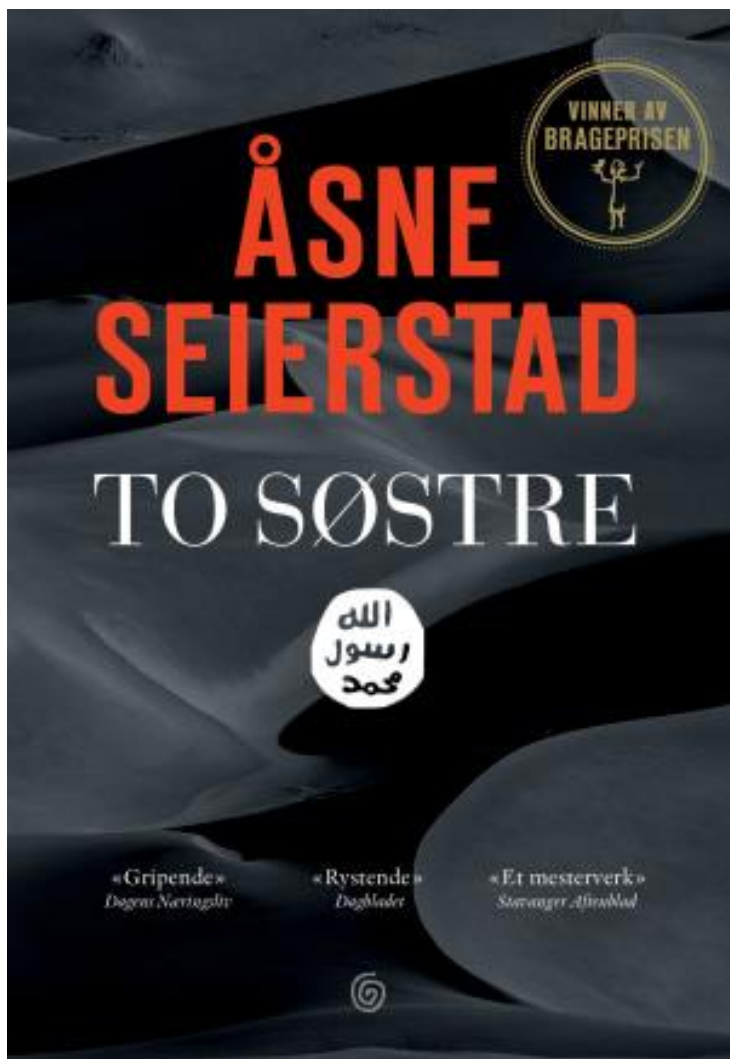
\$10
28 DECEMBER 2015
ISSN 0036-8075

AAAS













Demokratisert teknologi

- Billig
- Enkel å bruke
- Tas i bruk i stort omfang

Fremtidens medisin



Kunnskap om menneskets gener – Helse og sykdom





Psykisk helse

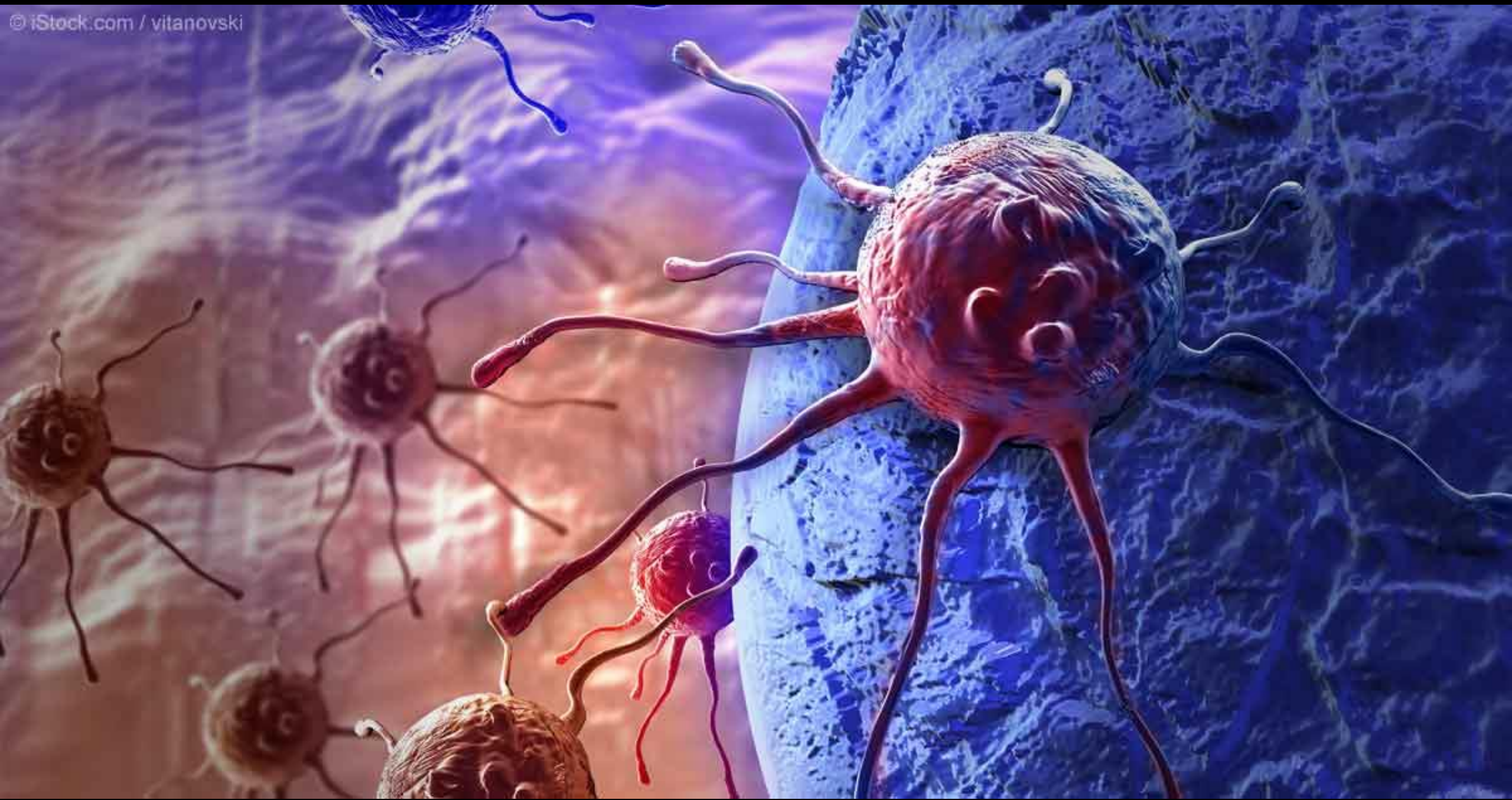
Fredag 17. februar 2017

21 kvinner fikk feilaktig fjernet bryster og eggstokker

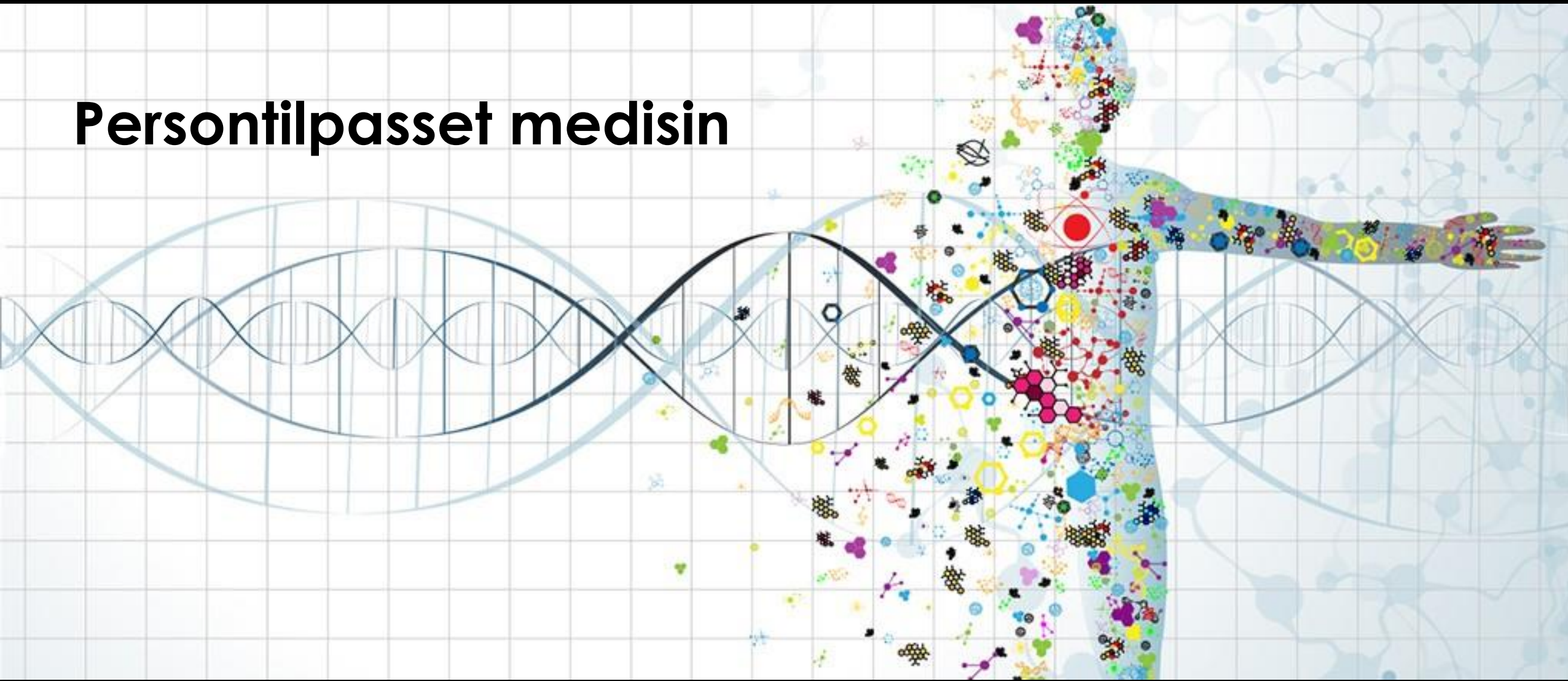




Screening og design av nye medisiner

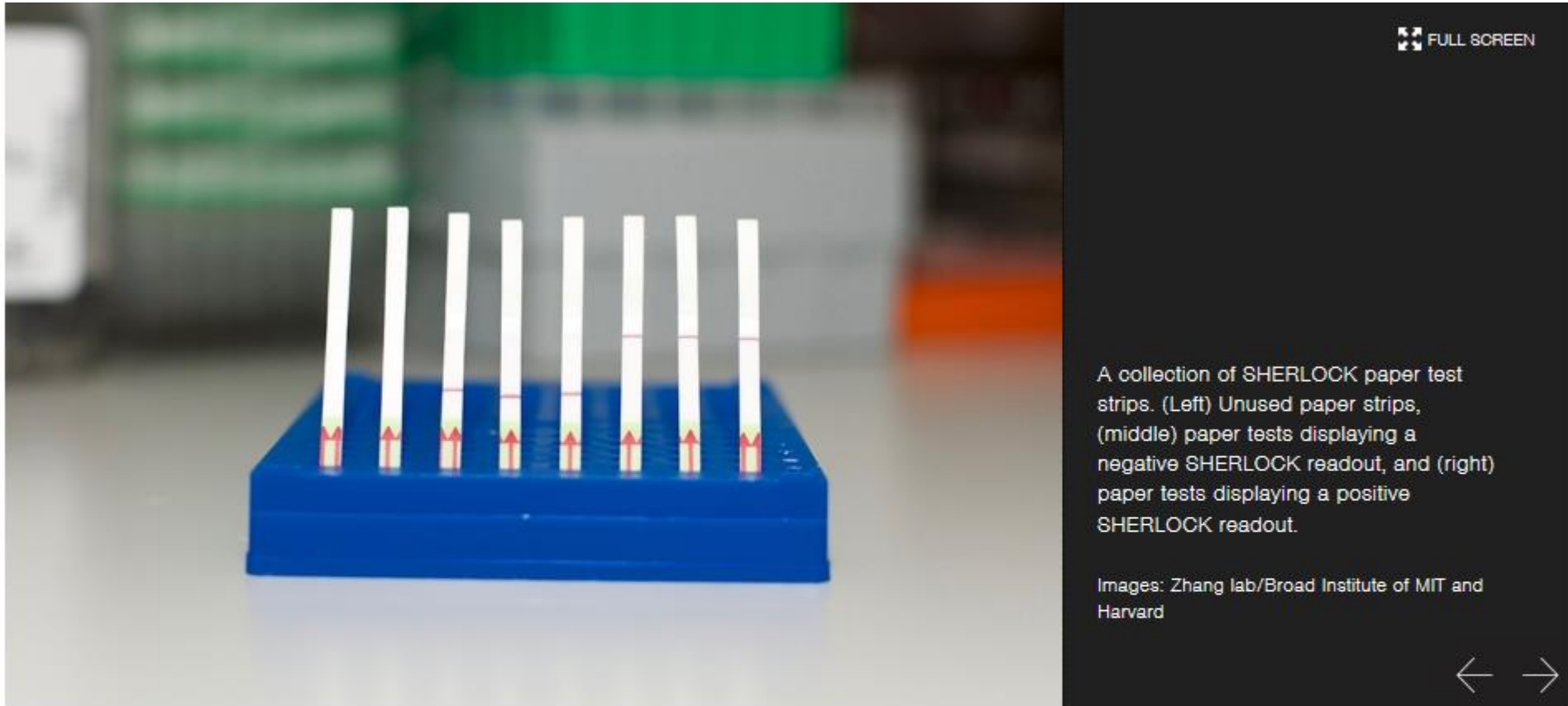


Persontilpasset medisin



Liquid biopsy





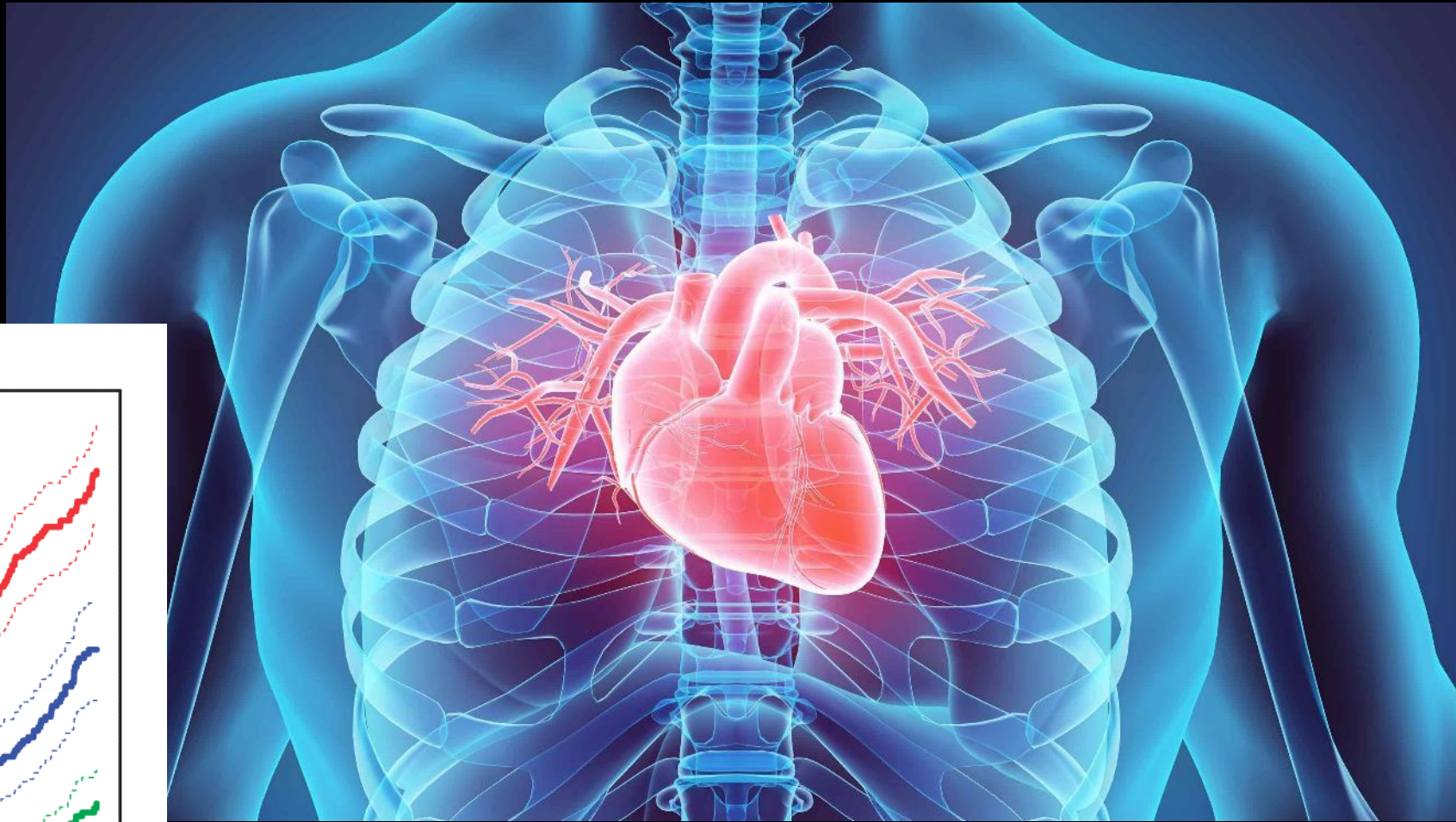
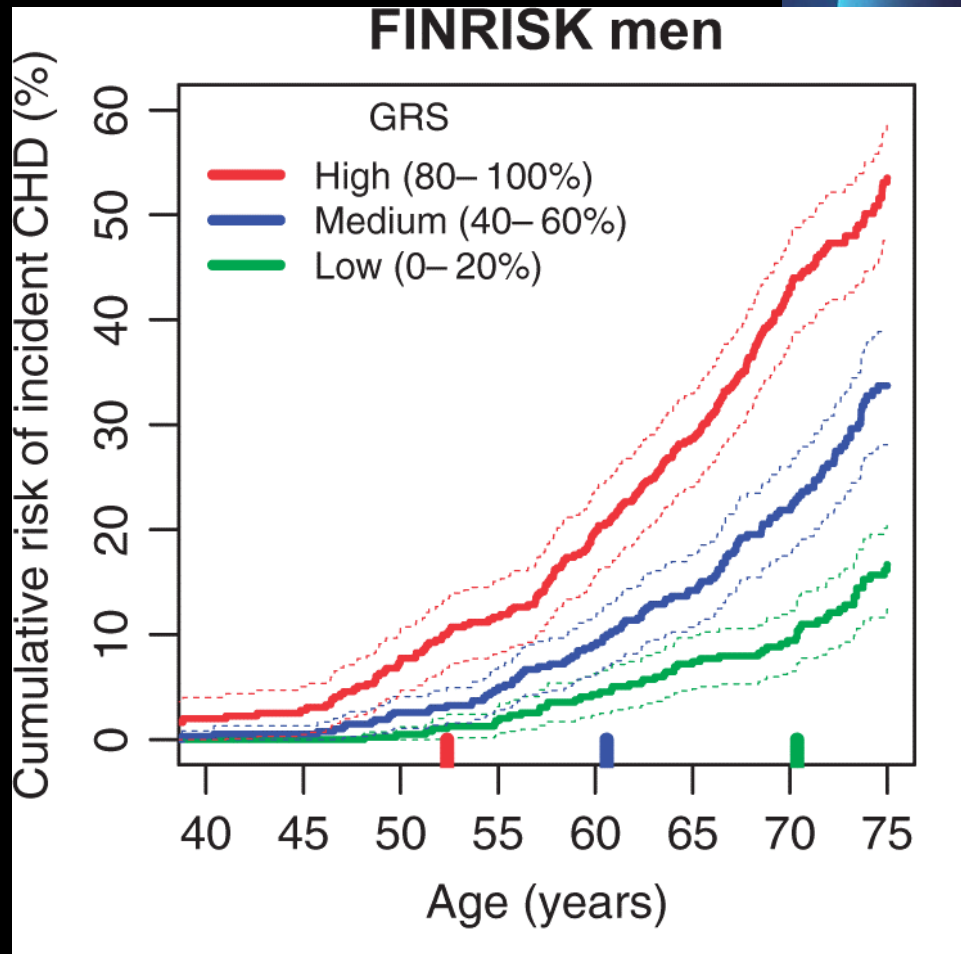
A collection of SHERLOCK paper test strips. (Left) Unused paper strips, (middle) paper tests displaying a negative SHERLOCK readout, and (right) paper tests displaying a positive SHERLOCK readout.

Images: Zhang lab/Broad Institute of MIT and Harvard

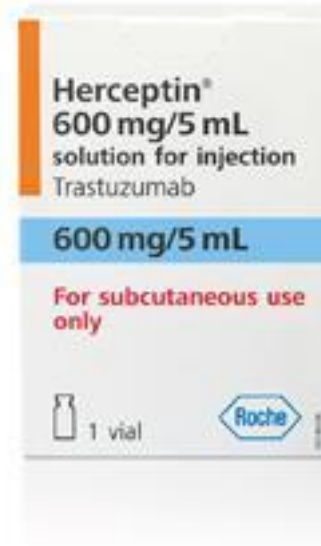
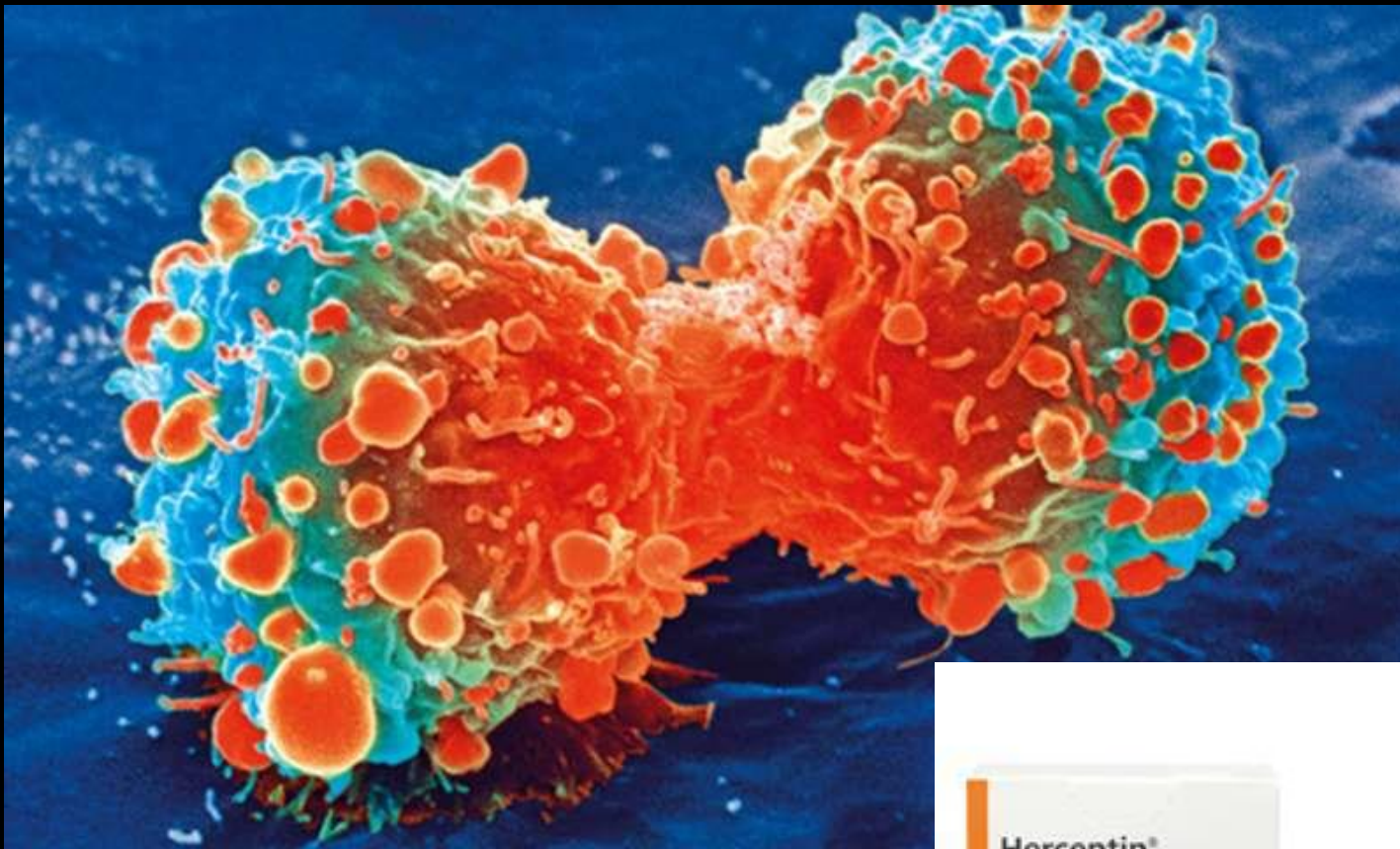
Researchers advance CRISPR-based tool for diagnosing disease

With SHERLOCK, a strip of paper can now indicate presence of pathogens, tumor DNA, or any genetic signature of interest.

Forebygging



Behandling





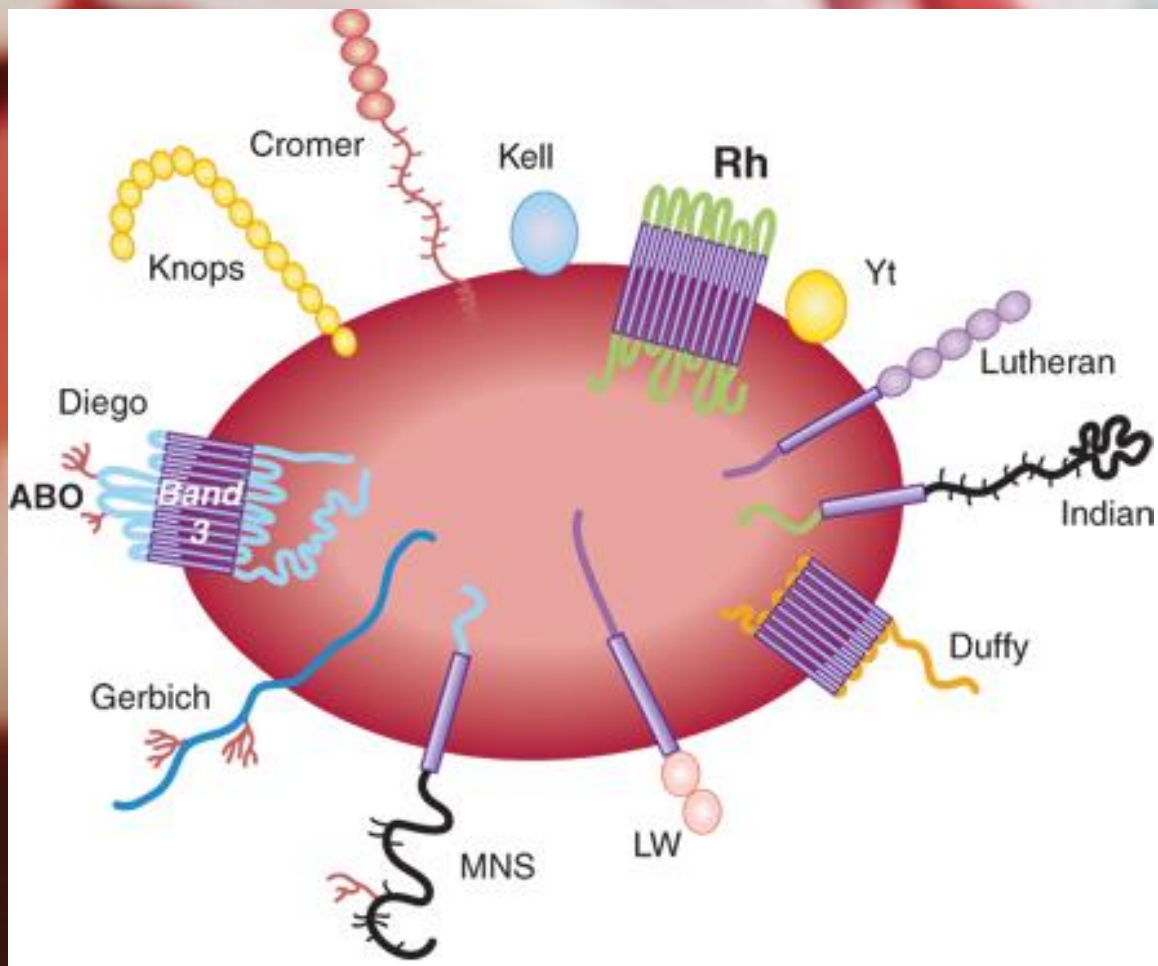
Sykdomsbehandling



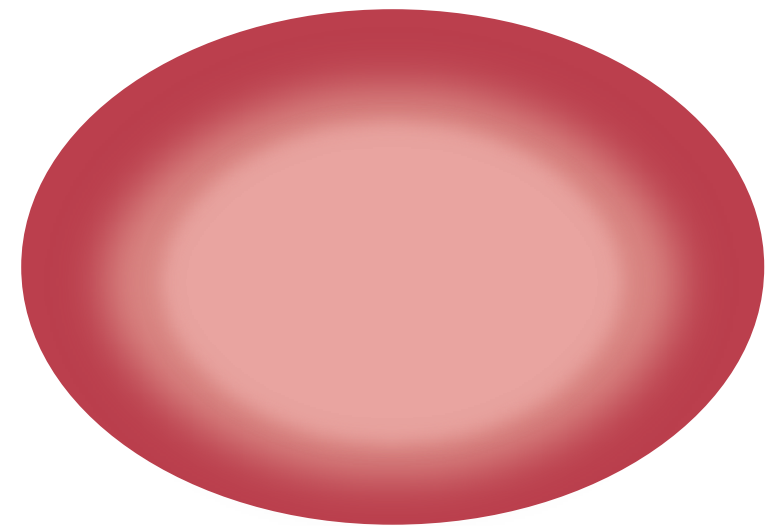


The image features several pill-shaped objects, each covered in a complex, glowing circuit pattern. The patterns consist of intricate lines and small white dots, resembling a microchip or a neural network. The pills are arranged in a scattered, overlapping manner. The background is a dark, textured purple. A semi-transparent grey box is positioned on the right side of the image, containing the text 'Levende medisin'.

Levende medisin



Universale blodceller





Gene editing saves girl dying from leukaemia in world first



One-off injection will save children from inherited blindness

Layla is doing well so far
Sharon Lee



THE CRISPR REVOLUTION

Gene-Edited 'Supercells' Make Progress In Fight Against Sickle Cell Disease



Man 'cured' of HIV through gene editing holds hope for others

By Associated Press

February 13, 2018 | 11:56am | Updated



Zolgensma 'Saved All of Our Lives': A Family's Journey Through Gene Therapy

JUNE 14, 2019 BY MARISA WEXLER, MS IN NEWS.



Utfordringer og flaskehalsler:

Kunnskapsmangel om genetiske sammenhenger

Usikkerhet om risiko og effekt ved genterapi


Tid – det tar lang tid å utvikle og teste behandlinger



Paradigmeskifte:

- Fra etablert behandling til kliniske utprøvinger
- Fra store til små pasientgrupper
- Fra stort til lite dokumentasjonsgrunnlag
- Fra klassiske medisiner til avanserte behandlingsforløp
- Fra langtidsbehandling og symptomlindring til forebygging og engangskur
- Fra distribuerte kostnader over tid til store engangskostnader





Genetknologi + IKT
= sant

Bedre analyseplattformer





#ASCO19

**- Vi er nødt til å vurdere
pasientene med
gensekvensering**

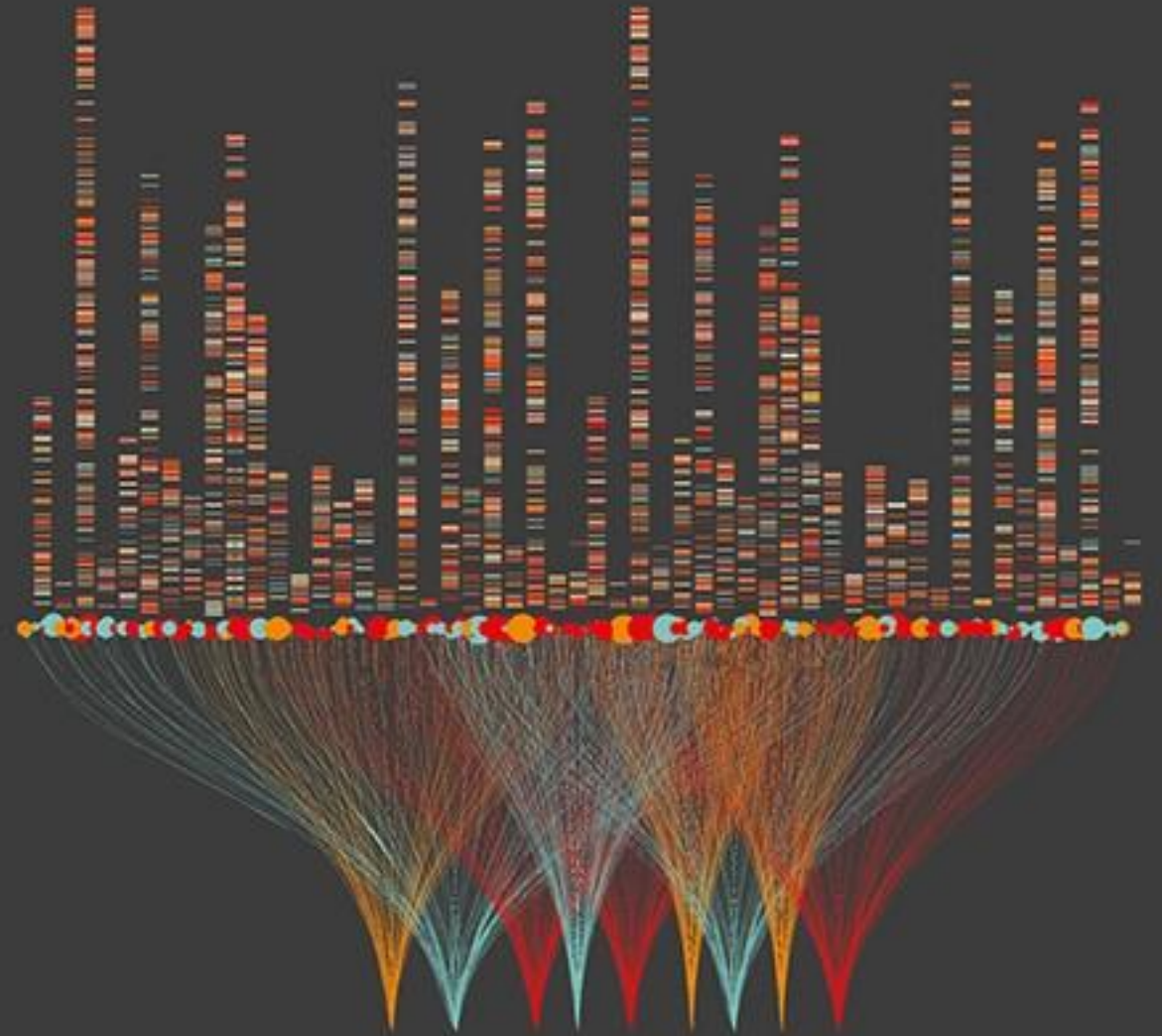
Home / News & Opinion

Artificial Intelligence to Boost Liquid Biopsies

Machine-learning algorithms tuned to detecting cancer DNA in the blood could pave the way for personalized cancer care.

Komplekse sykdommer

trenger millioner av
genomer



Bedre systemer for datadeling





[European Commission](#) > [Strategy](#) > [Digital Single Market](#) > [News](#) >

Digital Single Market

NEWS ARTICLE | 14 June 2019

Norway signs the 1 Million Genomes Declaration

On 14 June 2019, Norway joined the EU Member States driven initiative on linking genomic databases across borders, becoming the 21st country to join this cooperation mechanism.

Datasikkerhet og personvern



Infrastruktur



Samfunnsmessige, politiske
og etiske problemstillinger



Hvilken kunnskap vil vi ha?







Hvem skal få?

Hvem skal betale?



RYSTET: Ingrid Quist har benmargskreft. Mandag ble det bestemt at medisinen hun og andre trenger ikke blir innført i Norge. Ektemann Finn Helge Quist har i flere år kjempet for å få medisinen til Norge. Foto: Privat

Ny livsforlengende kreftmedisin fikk avslag: – Ytterst dramatisk

DAGENS **Medisin** Nyheter Debatt Pharma DM



– Fire av fem alvorlig syke lungekreftpasienter får ikke den beste behandlingen, sier leder for Norsk lungekreftgruppe, Odd Terje Brustugun, som sier at for hver måned går cirka 60 pasienter glipp av en ny type behandling. Foto: Vidar Sandnes

KREFTBEHANDLING

– Fire av fem alvorlig syke lungekreftpasienter får ikke den beste behandlingen

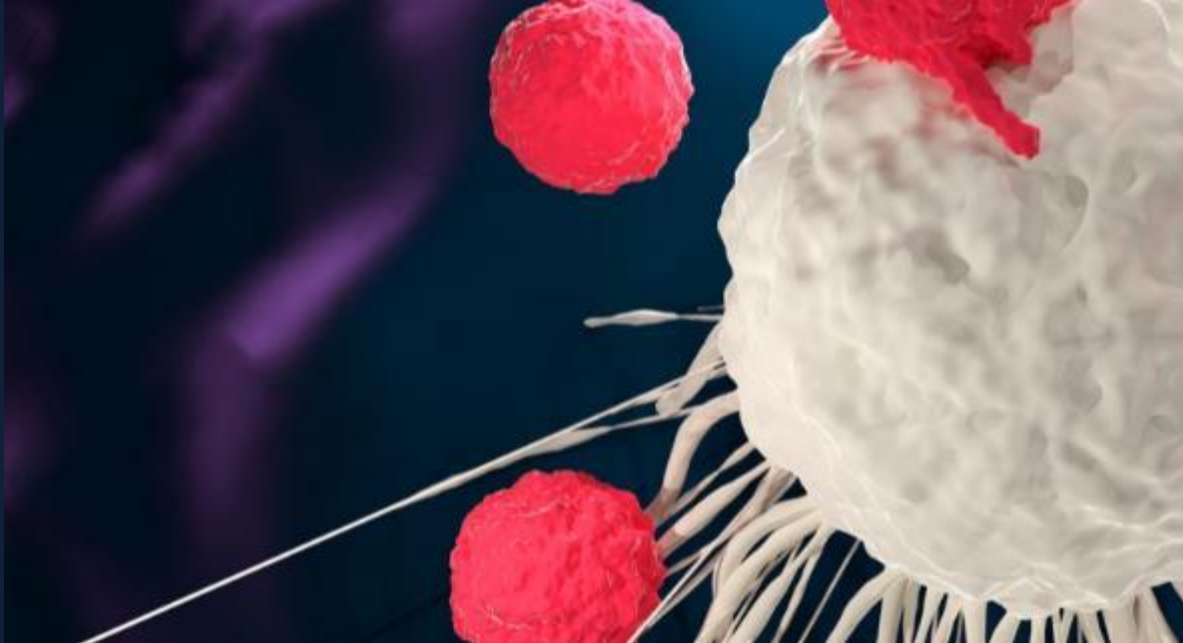


FIKK NEI: Stephen Storvik har blitt frisk som følge av privat behandling. Nå nekter det offentlige sykehuset Vestre Viken og ta over behandlingen. Foto: Hallgeir Vågenes, VG

Stephen Storvik (47) blir nektet immunterapi - fordi han har kjøpt behandling privat

Luxturna gene therapy for blindness to cost \$850,000

by Maggie Fox / Jan. 04, 2018 / 2:06 PM ET



HEALTH • DRUG PRICES

Is \$475,000 Too High a Price for Novartis's 'Historic' Cancer Gene Therapy?



FDA approves Novartis' \$2.1 million gene therapy — making it the world's most expensive drug







Chinese researcher claims first gene-edited babies

By MARILYNN MARCHIONE November 26, 2018

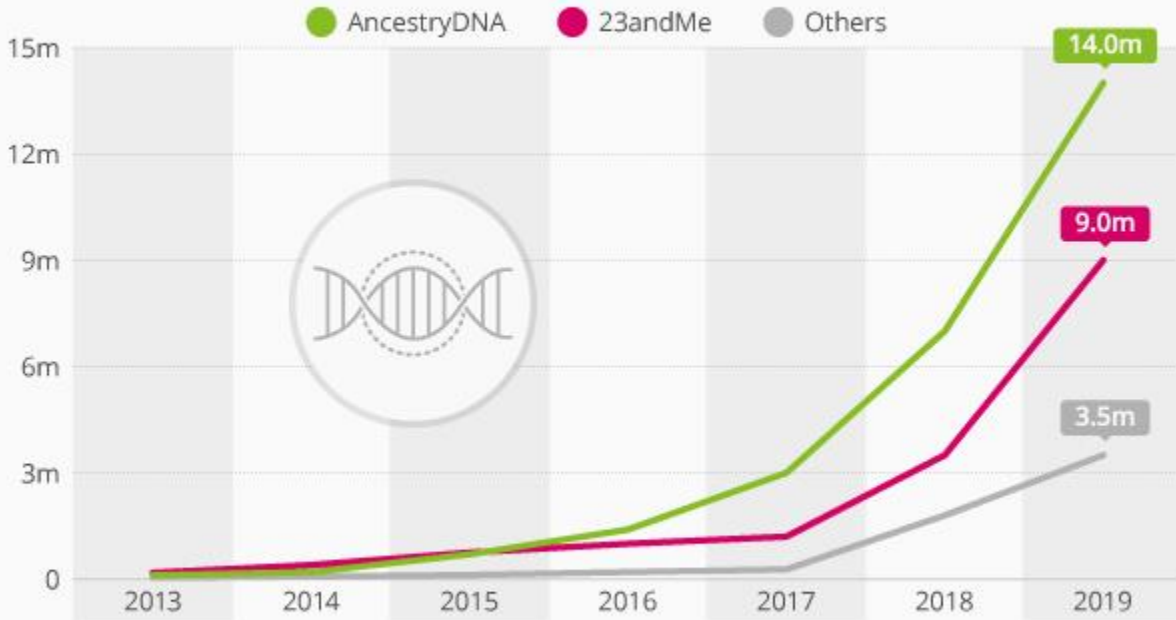


1 of 13
He Jiankui is reflected in a glass panel as he works at a computer at a laboratory in Shenzhen in China. (AP Photo/Mark Schiefelbein)



Commercial Genetic Testing Is Gaining Momentum

Estimated total number of people tested by consumer genetic companies*



* Direct-to-consumer genetic testing uses DNA samples, such as saliva, to track a person's ancestry; find family members; disclose a limited array of possible health risks; or brief someone on their personal preferences, like a taste for cilantro or wine.



@StatistaCharts

Sources: Company reports, Leah Larkin, ISOGG via MIT Technology Review

statista

Kan vi styre utviklingen når teknologien blir allemannseie?



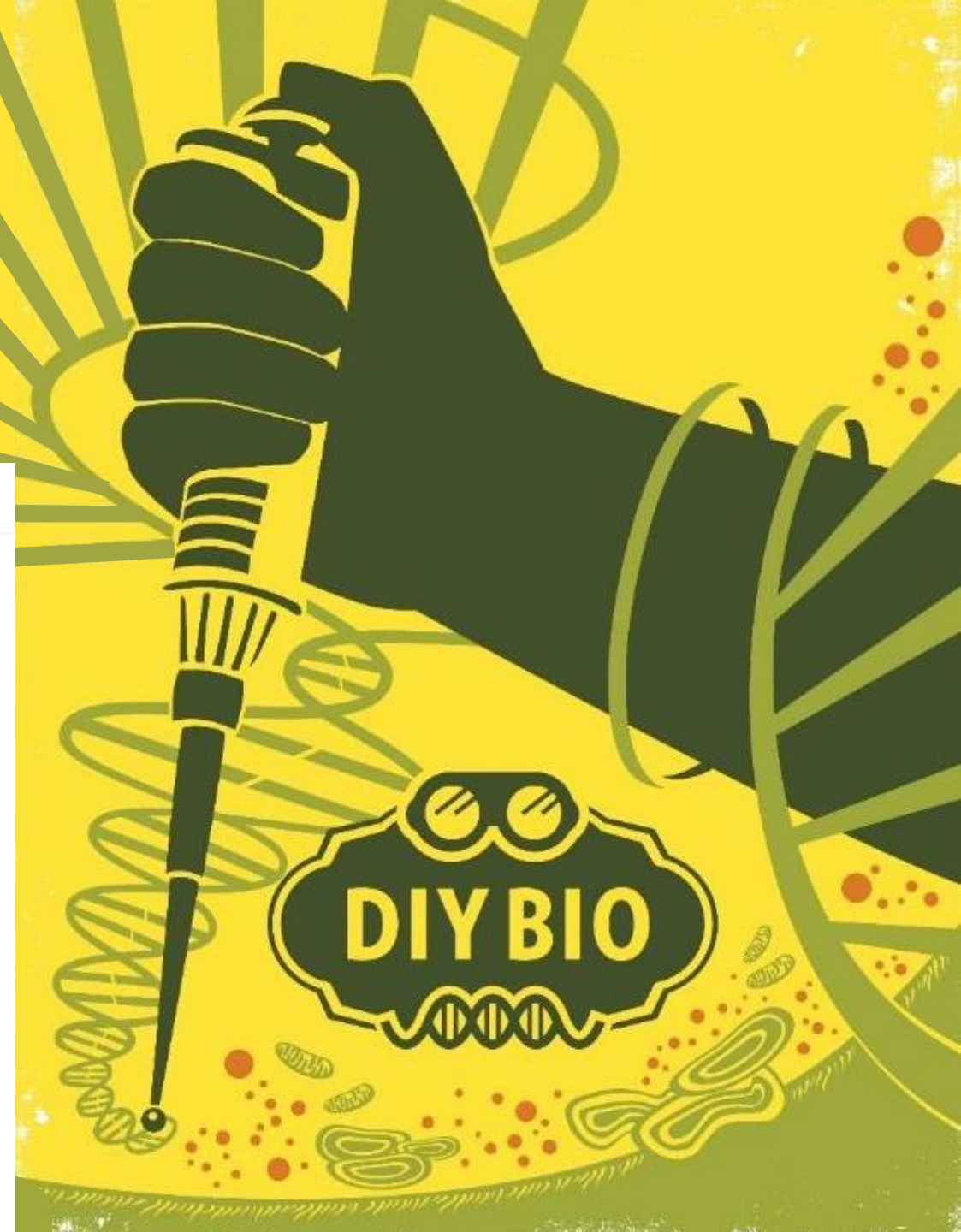
YouTube

Sök



Tristan Roberts holds the DNA he is about to inject himself with.

0:02 / 7:29



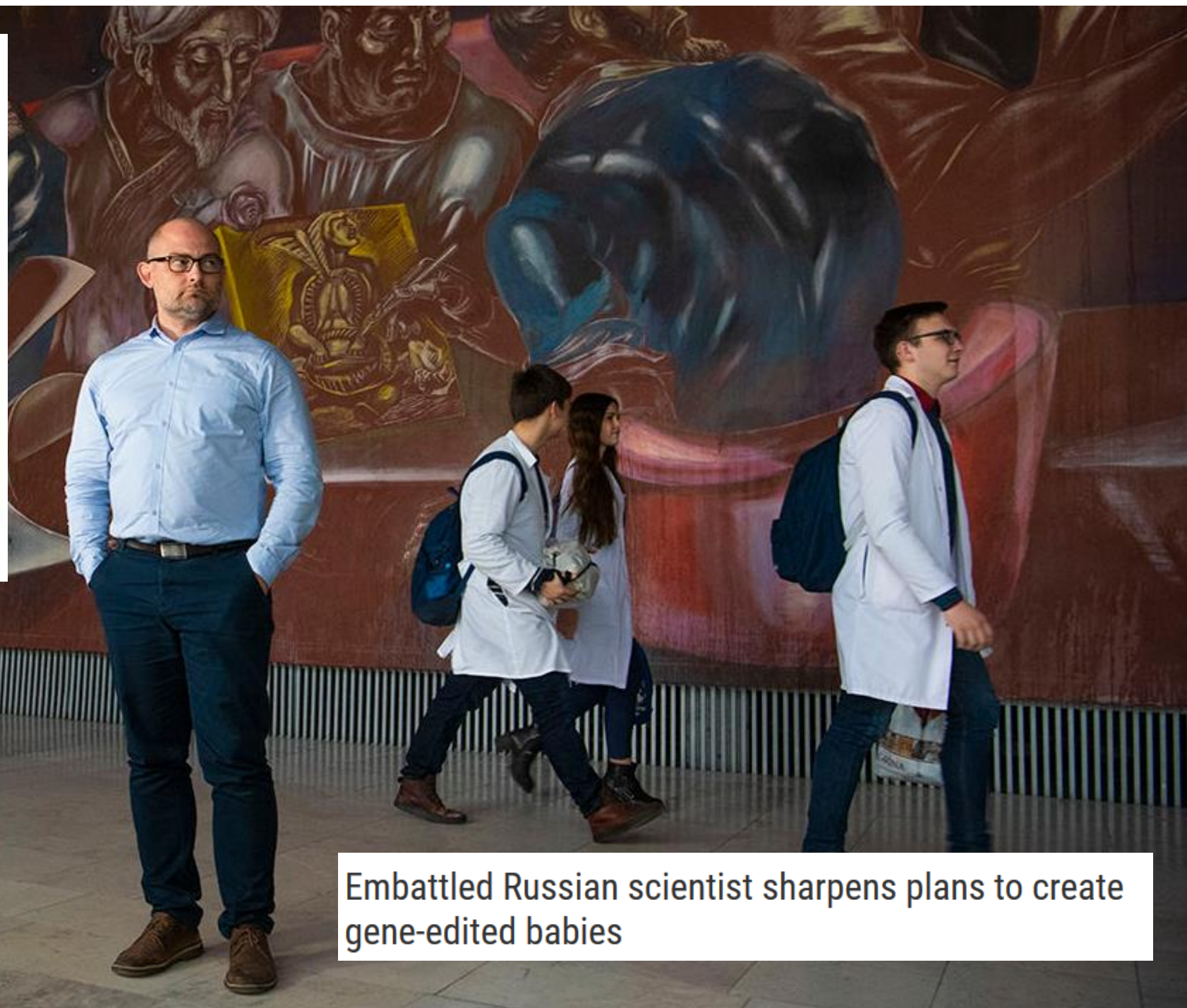
Fertility clinics around the world asked 'CRISPR babies' scientist for how-to help

By SHARON BEGLEY @sxbegle / MAY 28, 2019



He Jiankui speaks during the International Summit on Human Genome Editing in Hong Kong on Nov. 28, 2018.

KIN CHEUNG/AP



Embattled Russian scientist sharpens plans to create gene-edited babies

Disruptiv teknologi

Hvordan skal vi rigge fremtidens helsetjeneste?

Vårt fellesansvar å lage gode rammer





@sigridbratlie
@biotekradet



bioteknologiradet