



NEW ZEALAND GENOMICS LIMITED

NZGL: Maximising Genomics Capability for New Zealand

Infrastructure Update

eResearch 2016, Queenstown 9 – 11 February

Tony Lough
Advisor to the Board

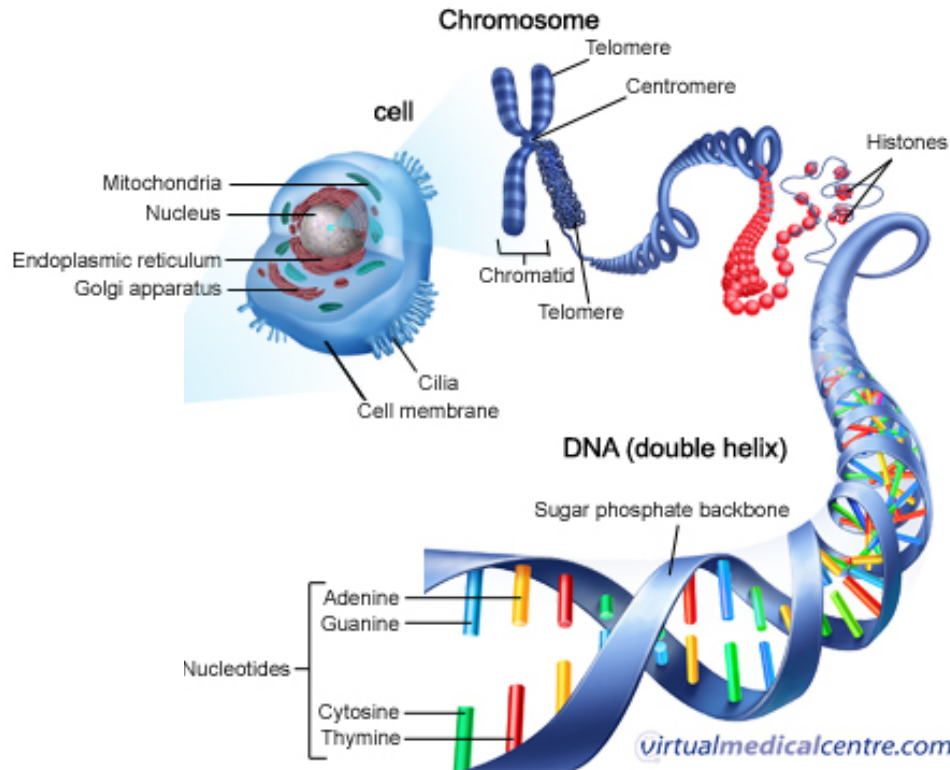
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Impact of Genomics



academic



agritech



health

⋮

⋮

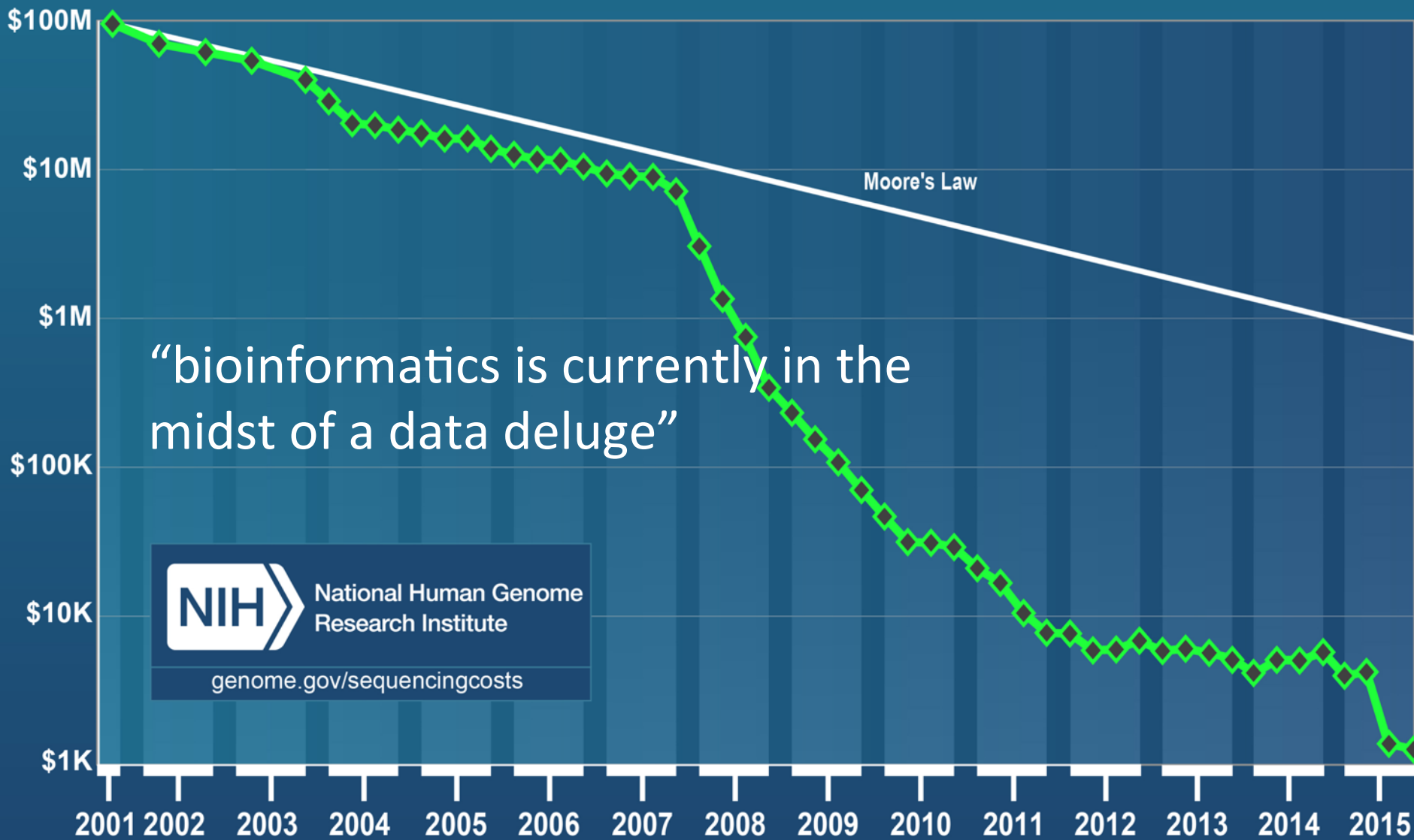
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Challenges and Trends: Big data in genomics



The Challenges? Mostly Data & Capability

Breeders

“what will make NZ breeding programs go faster”

- Data infrastructure & management
- Expertise and capability
- Phenotyping
- Cheaper genotyping

National Research Data Programme

- Active data
- Active data bridges

Technical Advisory Group

”a growing interdependency of techniques, tools, infrastructure and need for integrated pipelines & multidisciplinary teams”

- Store genomic data in publicly available databases – curated and available alternate analyses

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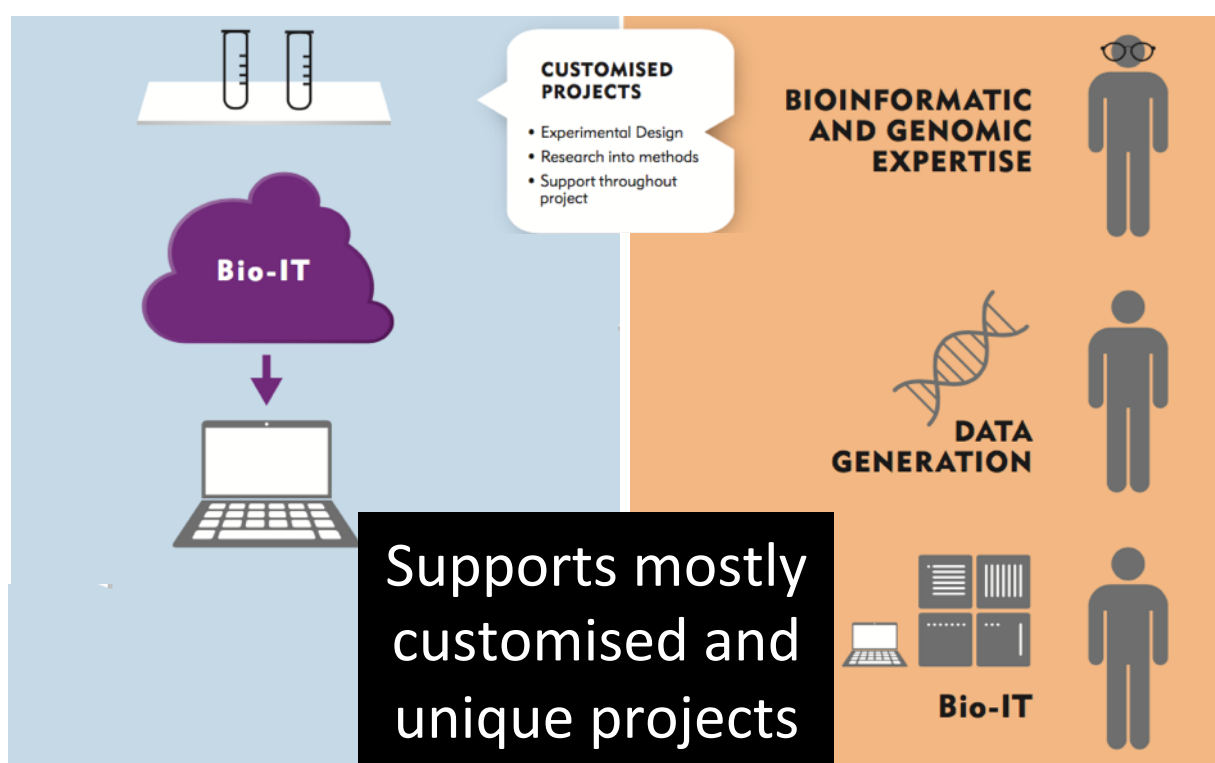
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Where have we come from?

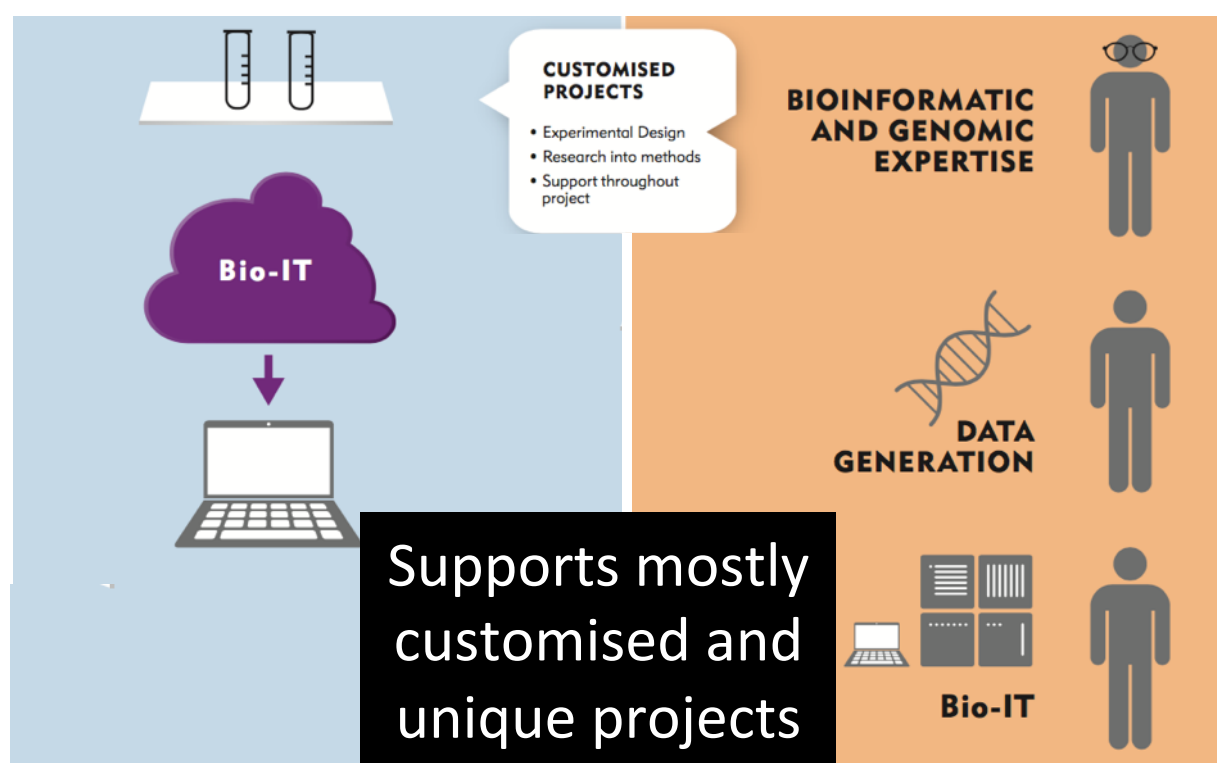


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Where have we come from?



Scoping, design & QC
 “how do I minimise experimental risk?”

Bio-IT support
 “how do I move & access data?”
 “what are the right tools?”
 “can I get command line help?”

A trusted research collaborator
 “embedded bioinformaticians”
 “a team within a team”

Data generation

Bio-IT Tools and compute

Bioinformatics & analysis

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RESEARCHER



36

END-USER RESEARCH ORGANISATIONS INC. ALL NZ UNIVERSITIES

240

PUBLICATIONS

900

PROJECTS COMPLETED

13,000

SAMPLES PROCESSED

2000

ENQUIRIES

\$10m

GRANTS

NZGL NETWORK CAPABILITY

3 WORLD CLASS GENOMIC FACILITIES



BIOINFORMATIC AND GENOMIC EXPERTISE



DATA GENERATION



Bio-IT



Services and capability

eResearch
2020

Strategic forum for joint NZGL, NeSI, and REANNZ activity.



Our sister High Performance Computer provider.

REANNZ

NZGL's contracted network provider.

Where are we going? Strategy

Maximizing genomics capability for New Zealand:

- **Enable sector value**
- **Provide genomics sector leadership**
(session 3.30pm Remarkables - NZGL-NeSI Alliance)
- **Maximize the impact of NZ investment**
- **Develop genomics human capital**



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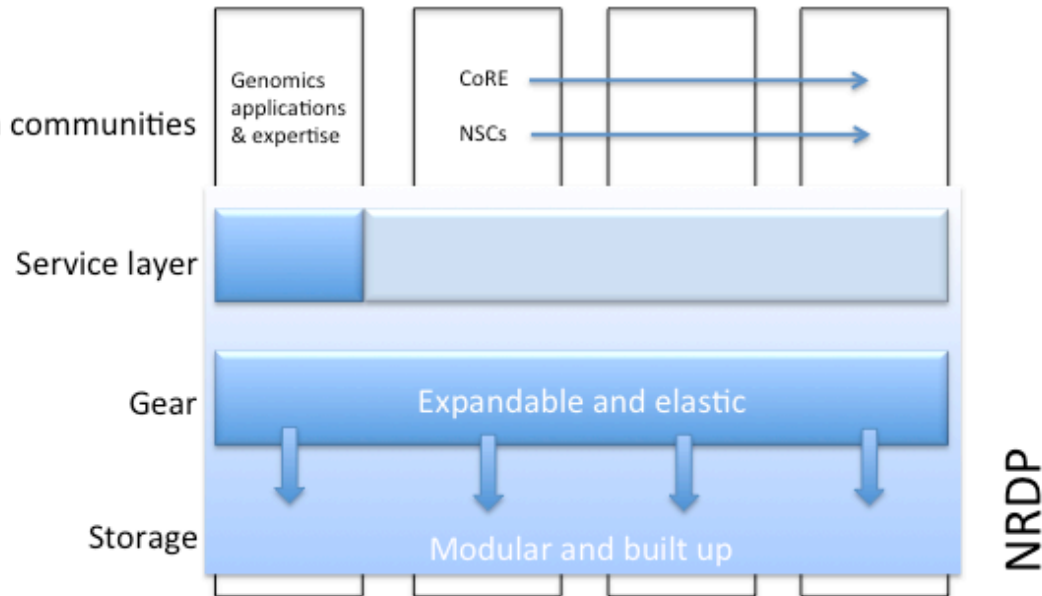


Where is NZGL heading? NZGL-NeSI Alliance

Why do it?

- Access & share respective expertise
- Joint capability uplift
- Support ambition & scale
- Provide genomic services irrespective of platform used
- Together support peak research communities eg NSCs

Research communities



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Where is NZGL heading?

NZGL-NeSI Alliance

Data generation

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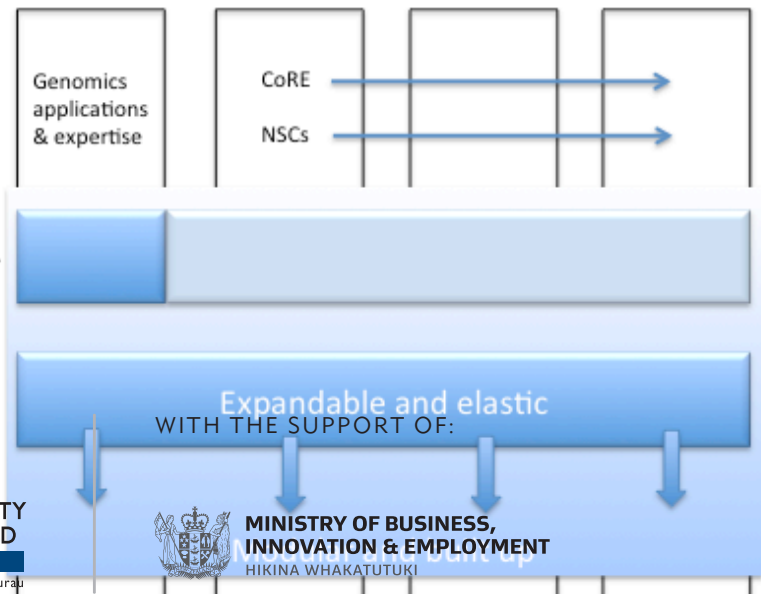
The impact for research communities?

Service, storage, elasticity & scale

Data management & capability uplift

Why do it?

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Forward View - 2016

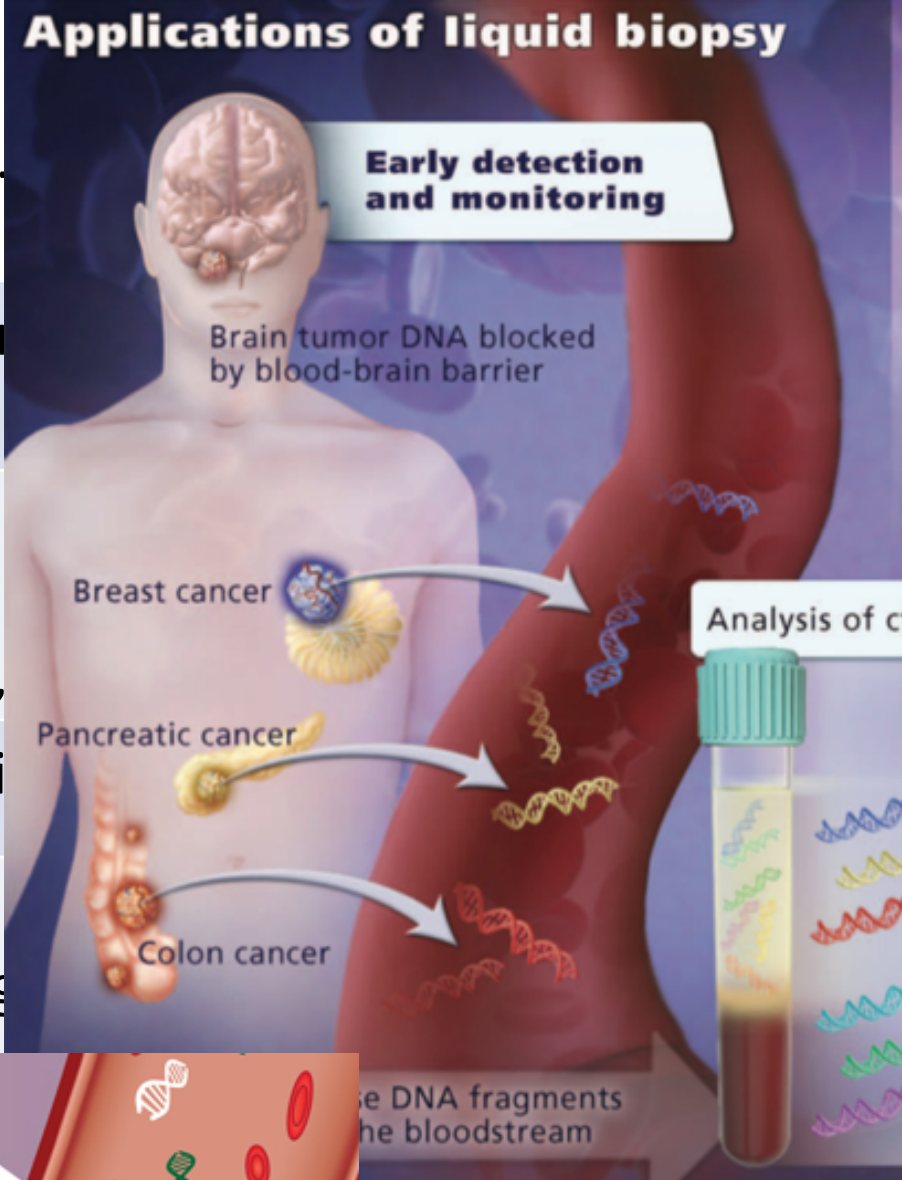
<p>MBIE</p>	<ul style="list-style-type: none"> • The future role of NZGL and network within the science system
<p>Maximising value from the infrastructures</p>	<ul style="list-style-type: none"> • NZGL-NeSI Alliance, REANNZ links
<p>Making it easier for the network to function</p>	<ul style="list-style-type: none"> • Network redesign – shared services • Bioinformatics review • Network tools – 365, email, Clarizen
<p>Improving service to clients</p>	<ul style="list-style-type: none"> • Reduced paperwork, better communication
<p>Extending genomics uptake</p>	<ul style="list-style-type: none"> • Genotyping, health, lifting latent markets (Alliance and training)

Opportunities (for the market)

Genomic Technology	<ul style="list-style-type: none"> • Long reads??
Data management	<ul style="list-style-type: none"> • Elasticity, scale and ambition • Linkage of data sets • Curations, stds, policies....
Training	<ul style="list-style-type: none"> • Applications, Bio-IT command line, scripting
Support	<ul style="list-style-type: none"> • “team within a team” bioinformatics • An end-to-end genomics service, whatever the Alliance platform (just more - better - faster) • Infrastructures support NSCs
Knitting Stick to it	<ul style="list-style-type: none"> • Lift latent market through support eg underpin the efforts for health

Opportunities

<p>Genomic Technology</p>	<ul style="list-style-type: none"> • Long reads?? and
<p>Data management</p>	<ul style="list-style-type: none"> • Elasticity, scale • Linkage of data • Curations, stds,
<p>Training</p>	<ul style="list-style-type: none"> • Applications, Bi
<p>Support</p>	<ul style="list-style-type: none"> • "team within a • An end to end g • All



Support eg underpin

NZ L Kakapo, Zealandia, Rutherford Tour

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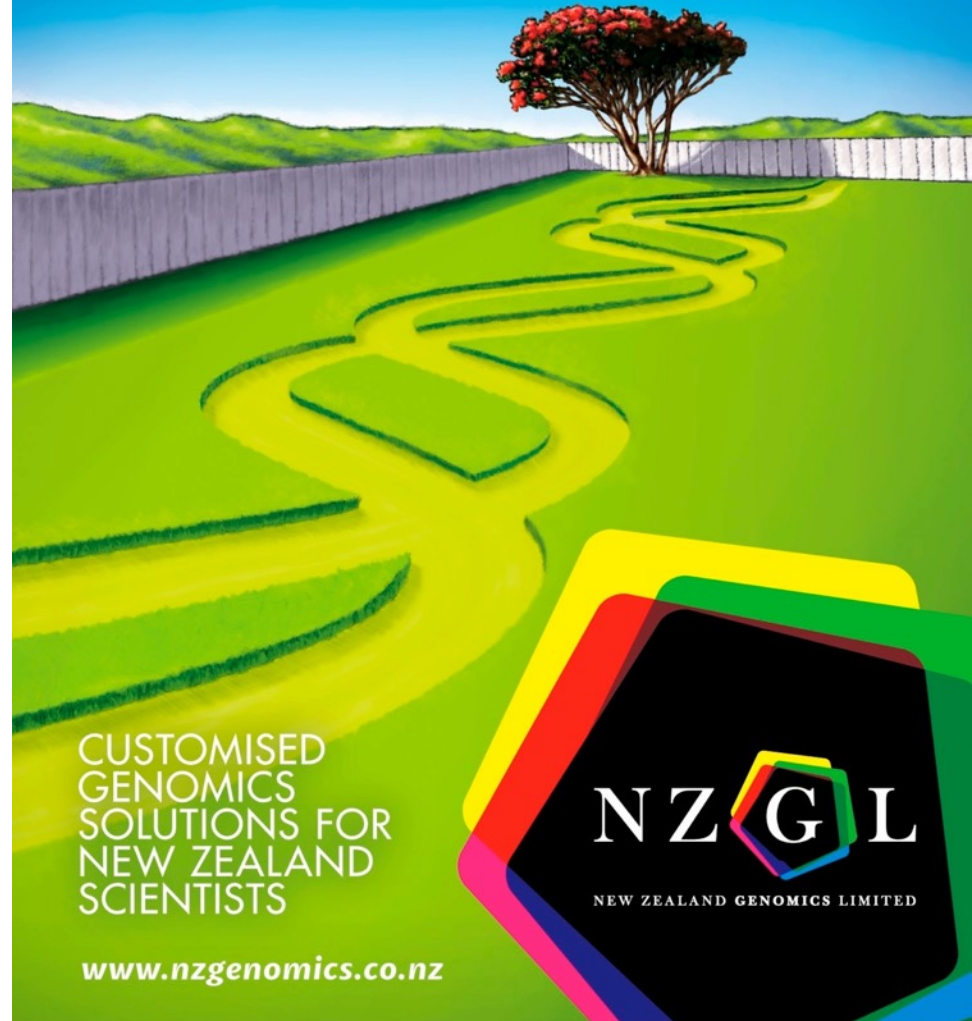
- e.g. Kakapo 125
- Zealandia, Wellington launch Monday 14 March
- Sequence entire population
- 40 birds WGS
- Crowd sourced funding
- Conservation, population genetics



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your own backyard.*



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