



# Cancer genomics – now and future

Mark Pinese, PhD

Senior Research Officer, Genomic Cancer Medicine Laboratory

[m.pinese@garvan.org.au](mailto:m.pinese@garvan.org.au) | @MarkPinese

# “Traditional” vs Precision Oncology

**NCCN Guidelines Version 1.2018 Anaplastic Gliomas/Glioblastoma**

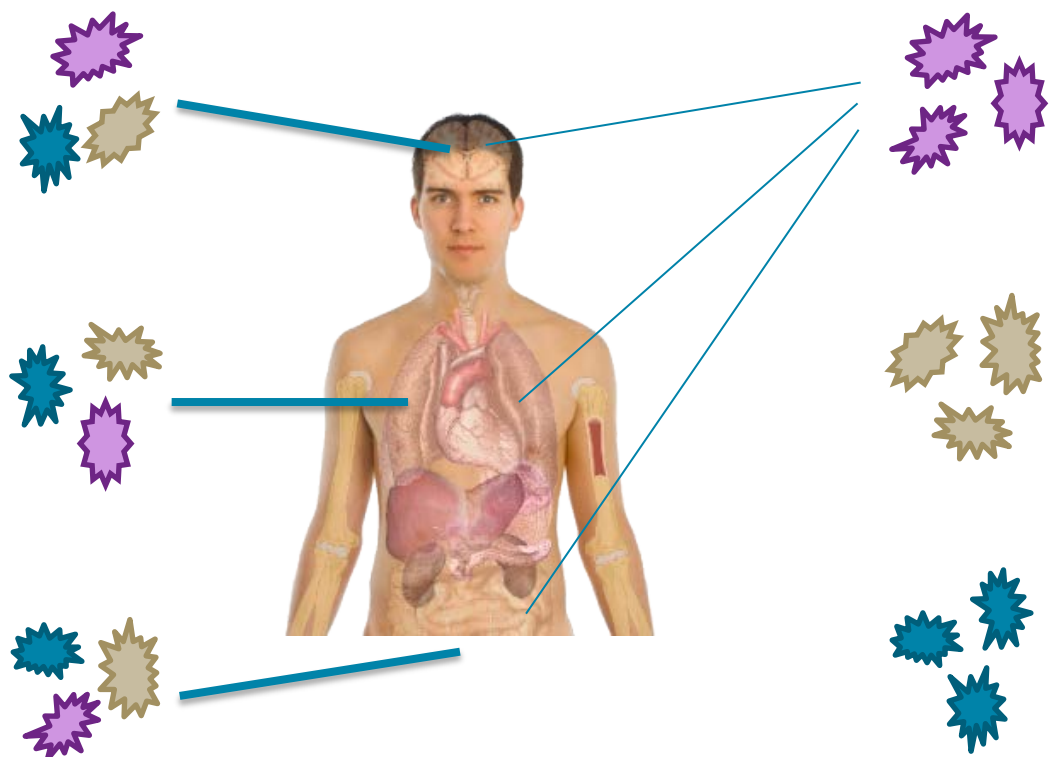
Category	Recommendation	Category	Recommendation
Primary Glioblastoma (WHO grade IV)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and temozolomide (TMZ) followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy or TMZ and bevacizumab).</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>
Anaplastic astrocytoma (WHO grade III)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>
Anaplastic oligodendroglioma (WHO grade III)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>

**NCCN Guidelines Version 4.2018 Non-Small Cell Lung Cancer**

Category	Recommendation	Category	Recommendation
Primary Lung Cancer	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>
Anaplastic astrocytoma (WHO grade III)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>
Anaplastic oligodendroglioma (WHO grade III)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>

**NCCN Guidelines Version 2.2018 Colon Cancer**

Category	Recommendation	Category	Recommendation
Primary Colon Cancer	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>
Anaplastic astrocytoma (WHO grade III)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>
Anaplastic oligodendroglioma (WHO grade III)	<ul style="list-style-type: none"> <li>Standard of care: Maximal safe resection followed by concurrent radiotherapy and TMZ followed by adjuvant TMZ.</li> <li>Consider clinical trial (enrollment for single-agent or combination treatment with TMZ and radiotherapy).</li> </ul>	Prognostic Biomarkers	<ul style="list-style-type: none"> <li>MGMT promoter methylation: Consider MGMT promoter methylation testing for prognostic information.</li> <li>EGFR amplification: Consider EGFR amplification testing for prognostic information.</li> </ul>



# Implementation

Pathologists

Oncologists

Genetic  
Counsellors

Scientists



Industry

Patients



# Lions Kids Cancer Genome Project

Aim: Provide personalised treatment for children with high-need cancer

4 million AUD, 400 children over 3 years

National roll-out, commenced 2017.  
62 patients currently enrolled.

<http://www.zerochildhoodcancer.org.au/>



Dr Mark Cowley



Prof. David Thomas



Lions Clubs International  
**FOUNDATION**



Australian Lions  
**Childhood Cancer** Research Foundation

**zero**  
CHILDHOOD CANCER



**KIDS**  
CANCER CENTRE  
hematology - oncology - transplant  
SYDNEY CHILDREN'S HOSPITAL  
PACIFIC

Aim: Provide access to molecular screening and novel personalised therapies for patients with advanced cancer and unmet clinical need.

Targeted sequencing of 170 genes, other molecular assays.

> 600 / 1,000 patients recruited

70% with at least one treatment recommendation

Prof. David Thomas



# Making Precision Medicine a Commodity

Prof. David Thomas



A/Prof. Marcel Dinger



*Individual  
cases*

*Trial  
LKCP, MoST*

*Product  
Genome.One*

2015

2017

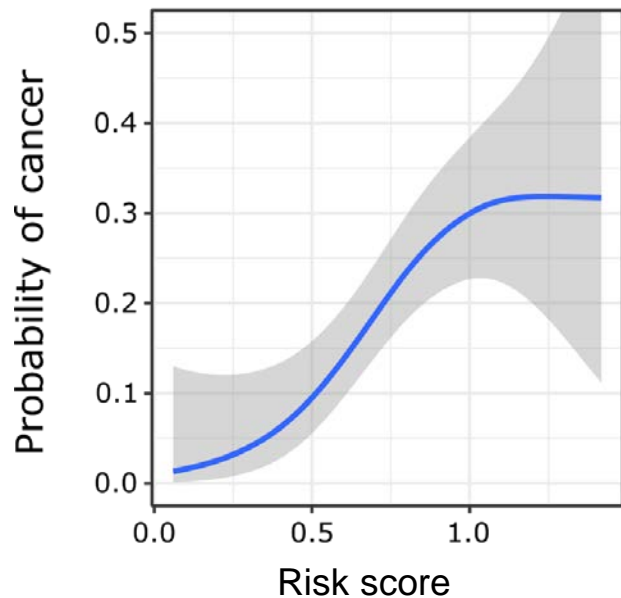
2019



**GENOME.**  
ONE®

# Future cancer surveillance

Integrated assessment  
of cancer risk



Whole body  
MRI

Early detection

Early treatment

**Cure**

Dr Mandy Ballinger



# Acknowledgements

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