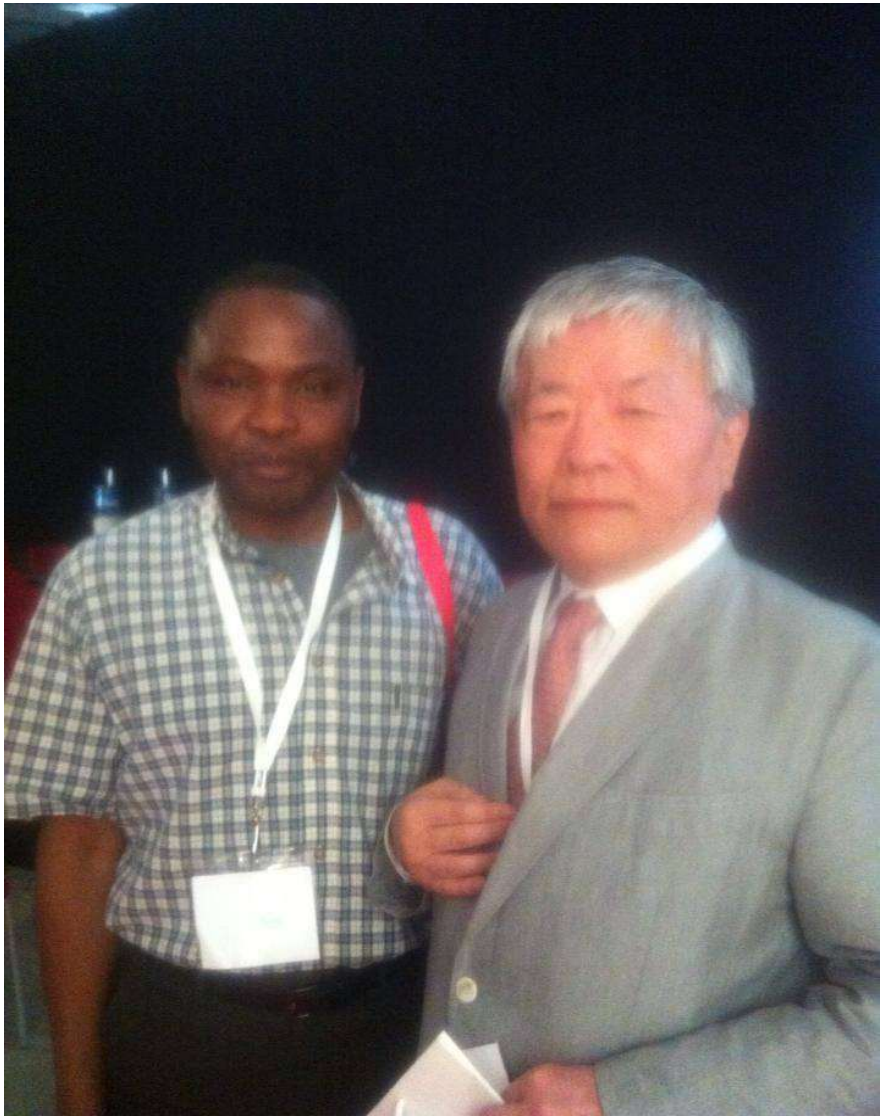
MCAA GloPol Project

Thomas Dzeha, PhD (Macq)
EU Marie Sklowdowska Curie Research Fellow

Nairobi, Kenya, 20/05/2026

If ever I saw beyond the horizon of a cat – Sir Isaac Newton



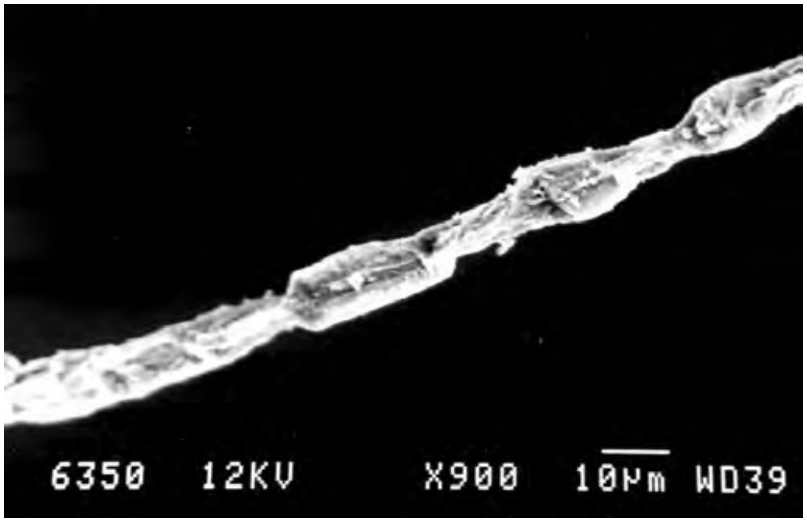
The goal of science must be solution of the problem

Nobel laureate Susumu Tonegawa (Medicine or Physiology in 1987)

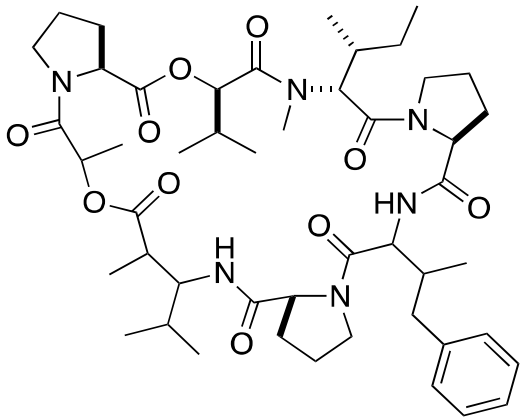
FEBS conference, St. Petersberg, Russia, 2013

The EU Marie Curie Fellowship at Newcastle University, UK

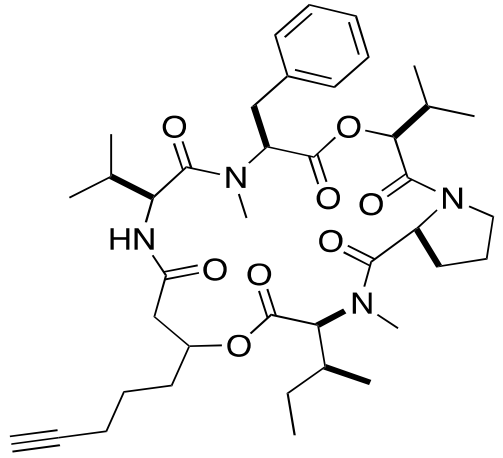




J. Nat. Prod. **2003**, *66, 5,712-715*

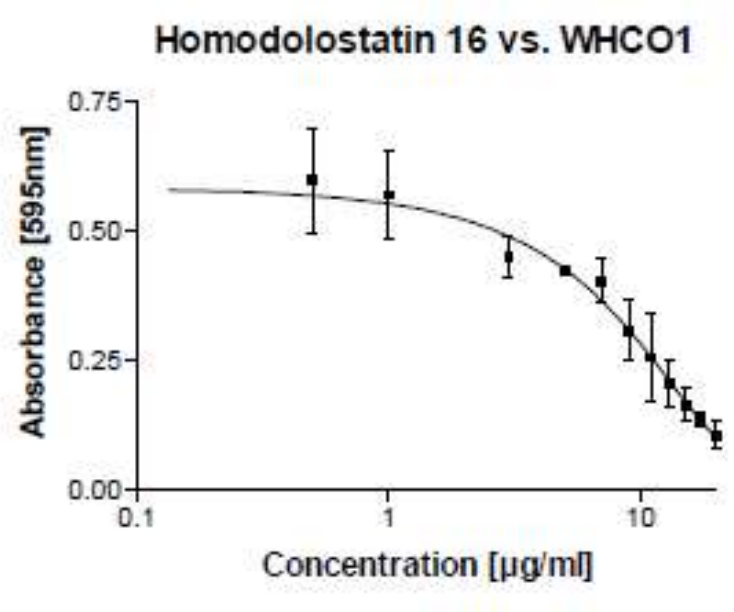


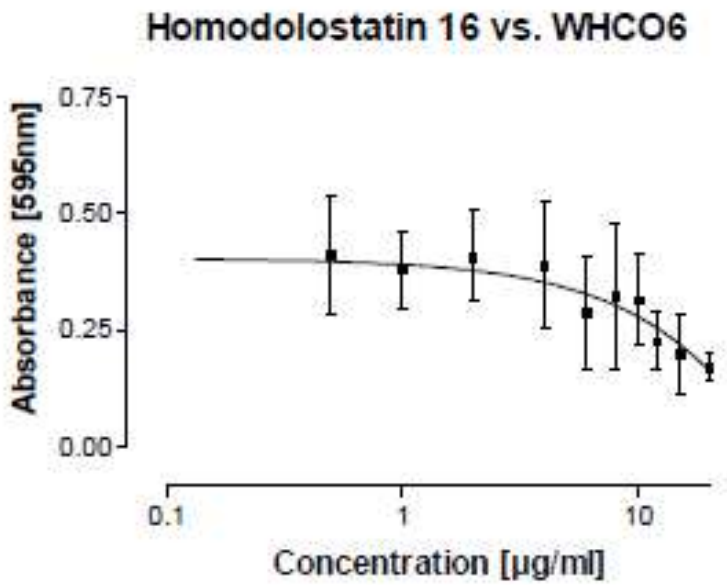
Homodolastatin 16 $C_{48}H_{72}O_{10}N_6$
m/z [M+Cs] 1025.4364



Antanapeptin A $C_{41}H_{60}N_4O_8$
m/z [M+H] 737.4460

Cell line activity of the dolastatins



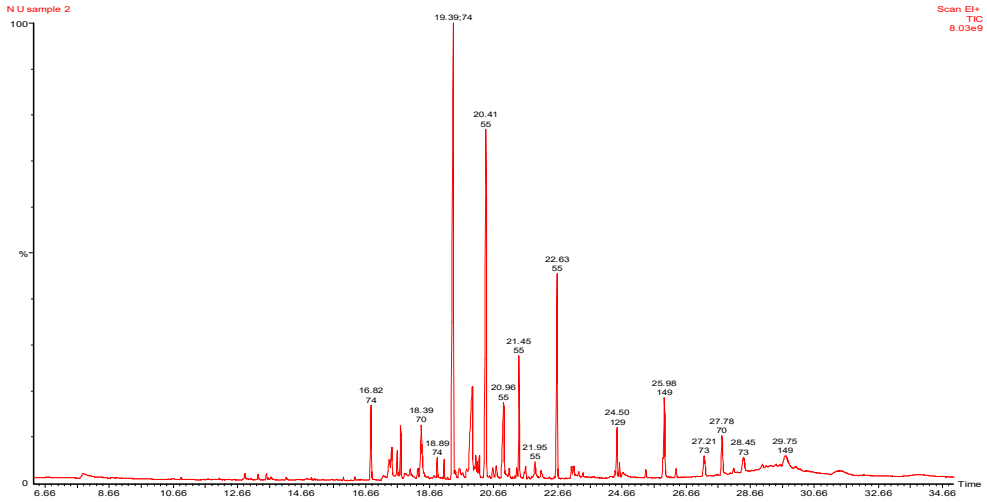


Homodolastatin 16
Oesophageal WHCO1 4.31µg mL^{-1}
Oesophageal WHC06 10.05 µg mL^{-1}

Dolastatin 16
Lung NC-H460: GI50 0.00096 µg mL^{-1}
Colon KM20L2 GI50 0.0012 µg mL^{-1}
Brain SF-295 GI50 0.0052 µg mL^{-1}
Melanoma SK-MEL5 GI50 0.0033 µg mL^{-1}

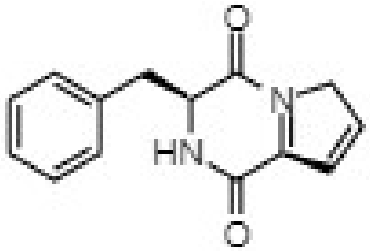
Lipid-dipeptide oil matrix of high cosmeceutical potential



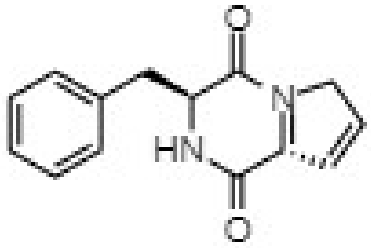


UVB absorbing fatty acids and FAME

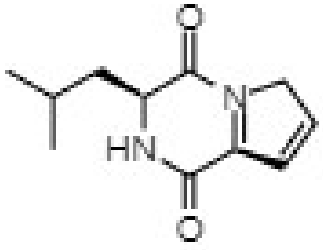
UVC absorbing 2,5-diketopiperazines



c(*L*-Phe-*L*-Pro)



c(*L*-Phe-*D*-Pro)

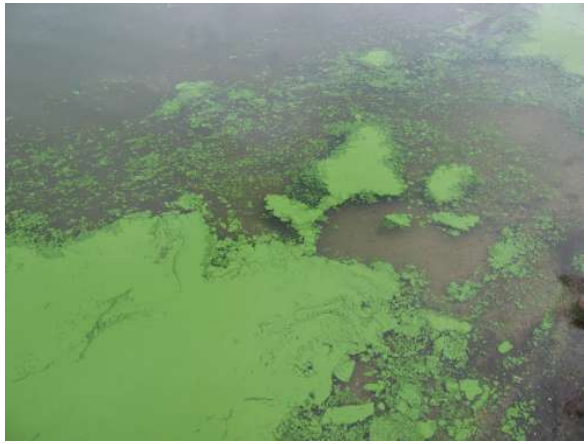


c(*L*-Pro-*L*-Leu)

D. John Faulkner Centre for Marine Biodiscovery and Biomedicine (DJFC)



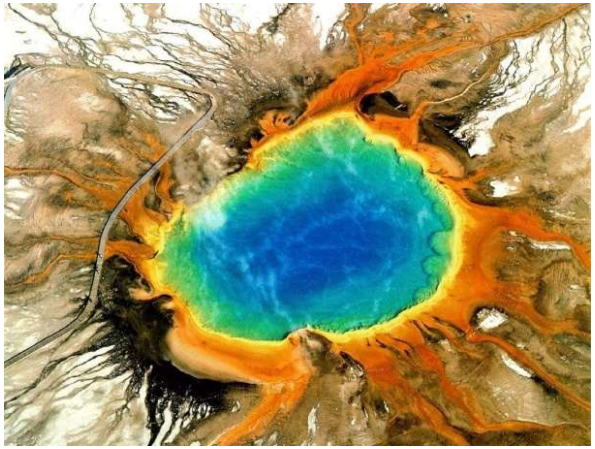
Fossils in central Australia



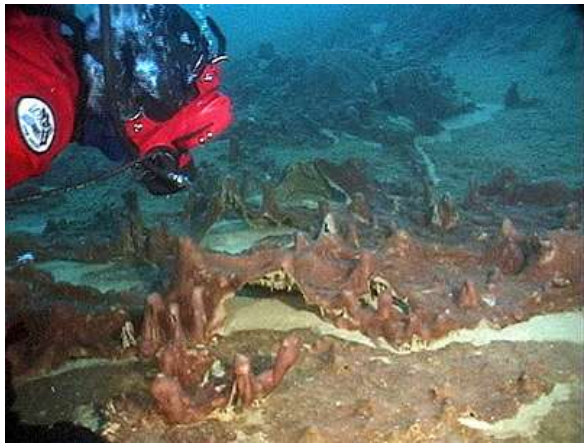
HABS in oceans



Blooms in fresh water



Cyanobacteria in hot springs



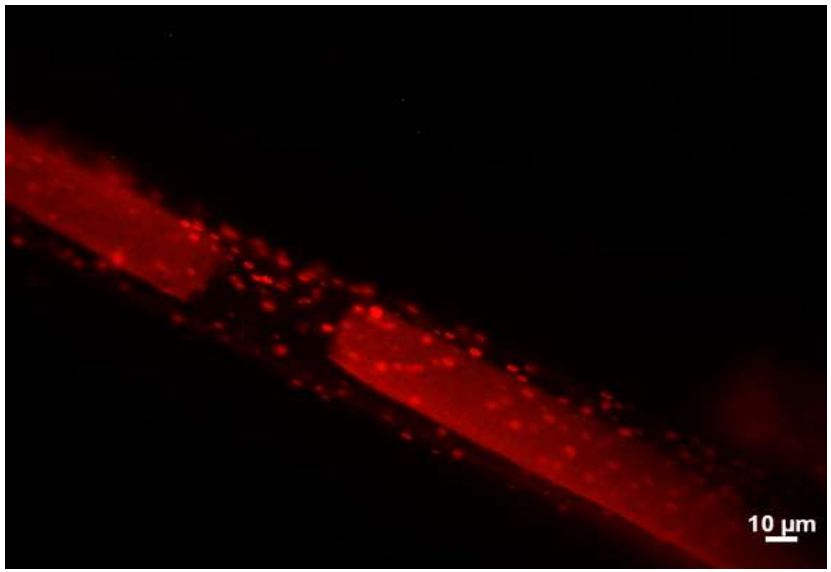
Antarctica



Deserts

Who are we?



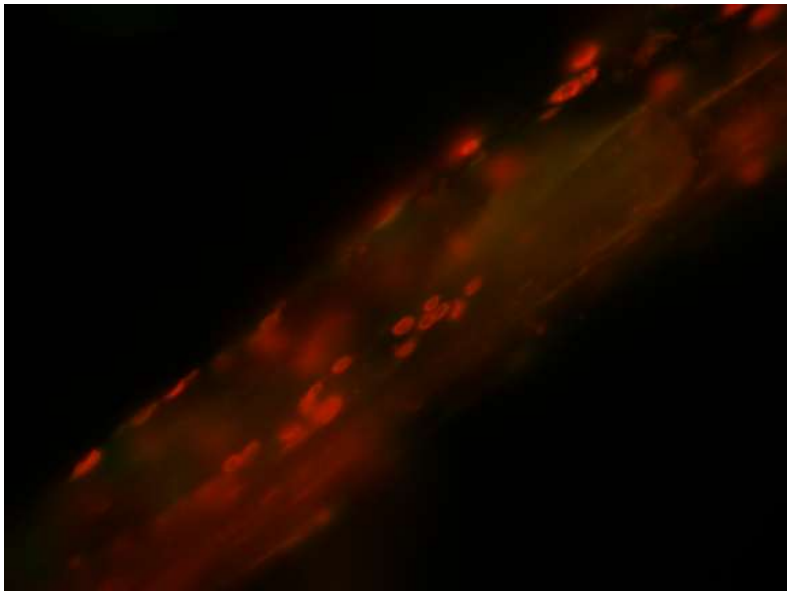


The DJFC was registered in Kenya in 2018 as a consortium of scientists working towards the discovery of therapeutic agents from the marine environment; with the overall aim to bridging the gap between academia and industry.

It has an international advisory team of experts in marine bio-discovery from UK, Europe, USA and South Africa.

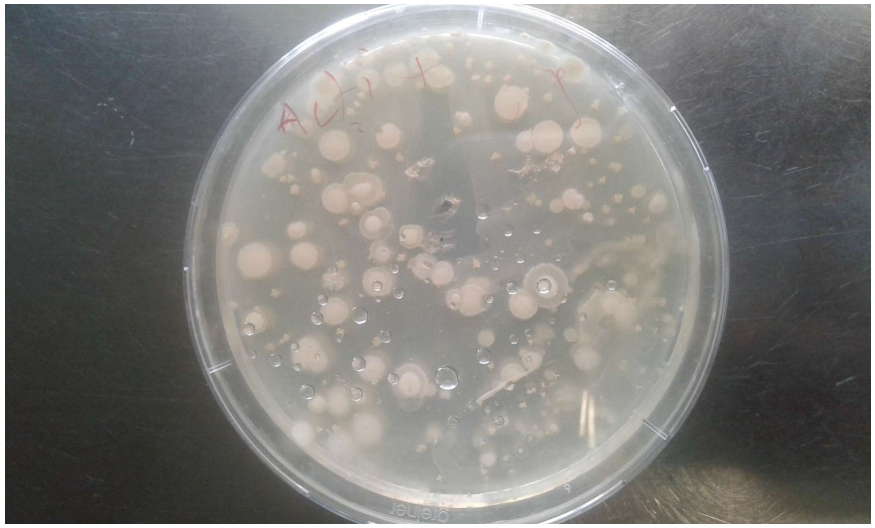
Our mission





Create an International cutting edge research facility in Kenya for Sub-saharan Africa **“The D. John Faulkner Centre for Marine Biodiscovery and Biomedicine”,** focus which is to sample and screen Kenya’s marine biodiversity for drug discovery from marine organisms targeting the diseases Cancer, Infectious diseases, Neglected diseases and rare-orphan diseases. We specifically aim to achieve this goal through capacity building in Kenya and the Western Indian Ocean (WIO) region focusing on training at the MSc, PhD and Postdoctoral levels

Vision



We envisage to developing a pool of expertise in Marine Drug discovery within 15 years in the disciplines of Chemistry, Molecular Genomics, Microbiology, Bioinformatics and Single Cell Technology to come up with a chemical entity and drug prototypes for cancer, infectious diseases and non-communicable diseases.

Theme 1: Sustainable production of dolastatins

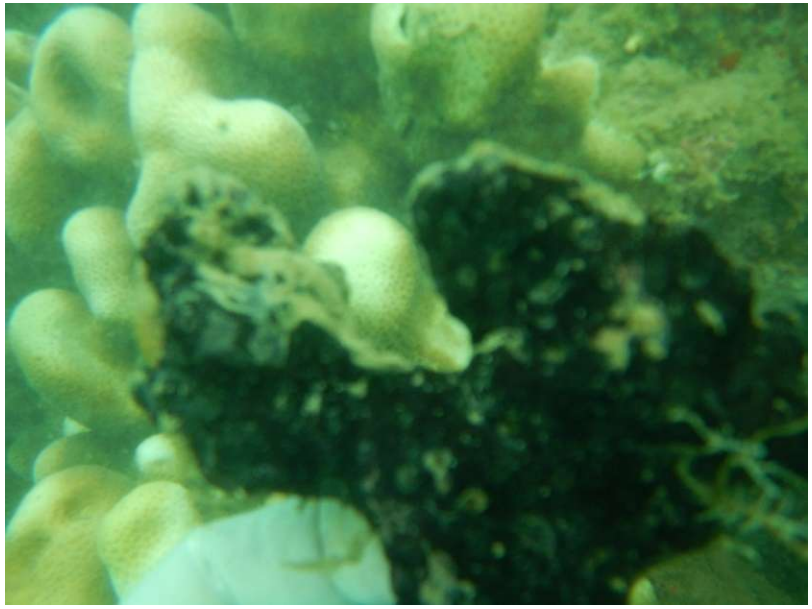
#1:1-879_Kenyan_*Moorea_producens*_Rep1
GGGAACCCTGACCCAGCGACGCCSCGTGAGGGAAGACGGCCTYCGGGTTGTAAACCTCTT
TTGTATGGGAAGAAGGATGTGACGGTACCATACGAATAAGTCCCGGCTAACTACGTGCCA
GCAGCCGCGGTAATACGTAGGGGACGAGCGTTGTCCGGAATTACTGGGCGTAAAGGGCGC
GCAGGCGGTTTGTCAAGTCAGCTGTTAAAAATGGGGGCTTAACCCTCATA-TGCTGTTGA
AACTGGCAGACTGGAGTGCTGTAGAGGCAAGTGGAATTCCCAGTGTAGCGGTGAAATGCG
TAGATATTGGGAAGAACACCGGTGGCGAAGGCGACTTGCTGGGCAGCAACTGACGCTGAG
GC
#1:1-636_Kenyan_*Moorea_producens*_Rep_2
GGGAACCCTGACCCAGCGACGCCGCGTGAGGGAAGACGGCCTTCGGGTTGTAAACCTCTT
TTGTWTGGGAAGAAGGATGTGACGGTACCATACGAATAAGTCCCGGCTAACTACGTGCCA
GCRGCCGCGGTAATACGTAGGGGACGAGCGTTGTCCGGAATTACTGGGCGTAAAGGGCGC
GCAGGCGGTTTGTCAAGTCAGCTGTTAAAAATGGGGGCTTAACCCTCATA-TGCTGTTGA
AACTGGCAGACTGGAGTGCTGTAGAGGCAAGTGGAATTCCCAGTGTAGCGGTGAAATGCG
TAGATATTGGGAAGAACACCGGTGGCGAAGGCGACTTGCTGGGCAGCAACTGACGCTGAG
GC

Theme 2: Antibiotics drug discovery
DJFC Kenya – Rhodes and SAIAB

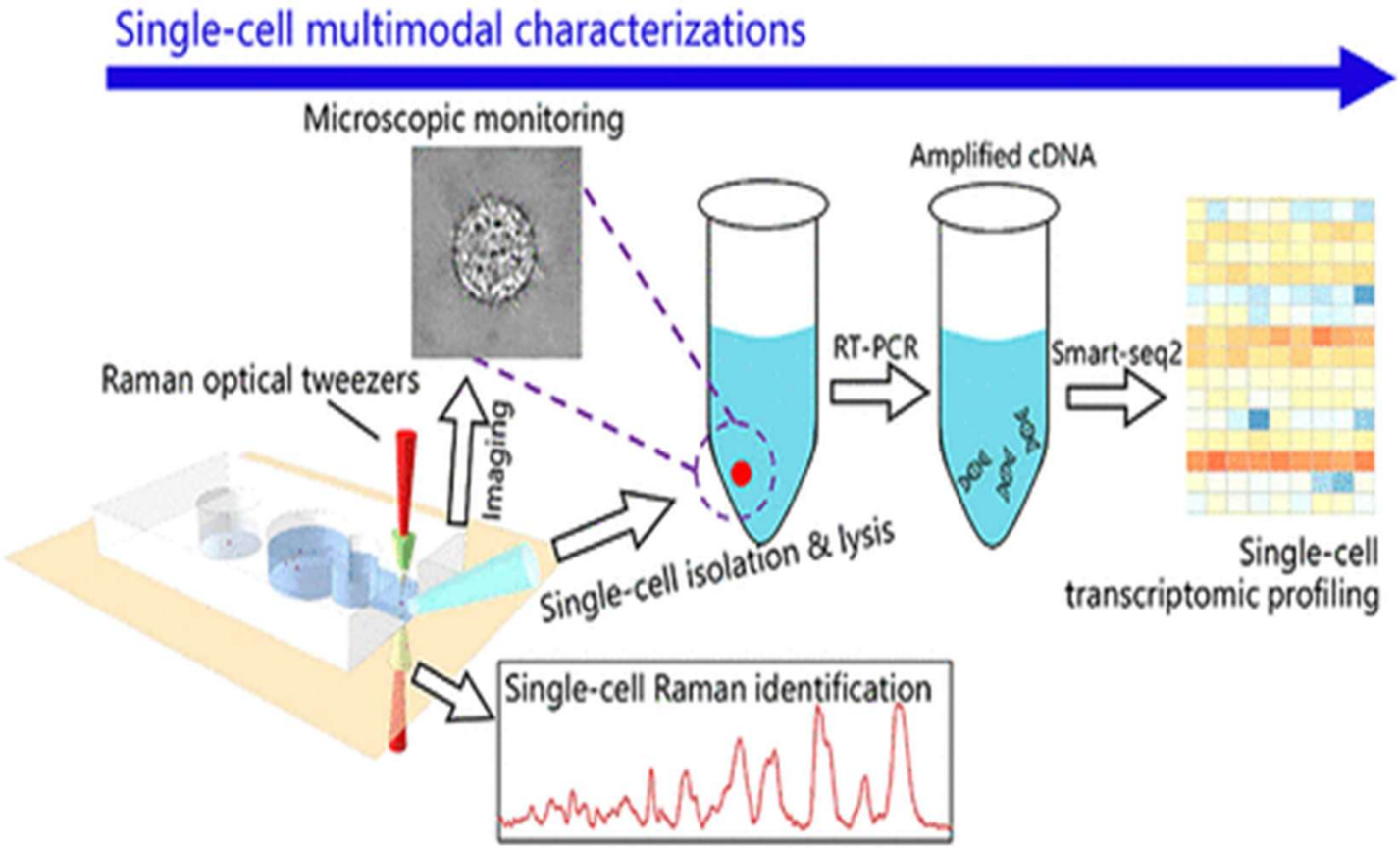








Theme 3: Bacteria microfluidics for understanding genetic disorder diseases



Our recent research has shown that a very tiny number (~1 to 10 in a million) of bacteria of the genus Bacillus isolated survive on exposure to UV radiation

Conclusion and outlook

- DJFC initiative is the way towards the marine biotech industry in Kenya
- Universities MUST seize opportunities in start-ups and Biotech industry. They need to come up with ideas, sell to industry and create employment to student turnovers. Good models are Technical University Munich, Oxford University, Stanford and Harvard.
- Kenya has Institutional basis for marine biodiscovery eg KMFRI which has RV Mtafiti which can reach out to the EEZ and KEMRI/Wellcome Trust at Kilifi has DSI facilities including second generation sequencing facility.
- A postdoctoral research scheme by EU Marie Curie as the driving force in marine biodiscovery research is needed in Kenya and the region.
- Kenya has the necessary human capital to realise marine biodiscovery with the DJFC initiative.

Acknowledgement and support

- Professor Marcel Jaspars of the Marine Biodiscovery Centre, University of Aberdeen, Scotland, UK
- Professor Rosemary Dorrington of Rhodes University, South Africa and her staff
- Professor Albert Chakona, SAIAB
- MCAA GloPol Project
- EU in Kenya at 50



THANK YOU