



8th BIENNIAL CSIR CONFERENCE 2022

Harnessing research, development and innovation for a
robust South African economy

ReSyn Biosciences/CSIR Collaboration An Ongoing Partnership in Microsphere Technology

2 November 2022, 11:50-12:20
CSIR ICC, Pretoria, South Africa

Dr Isak B Gerber, Principal Researcher, CSIR NextGen Health



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

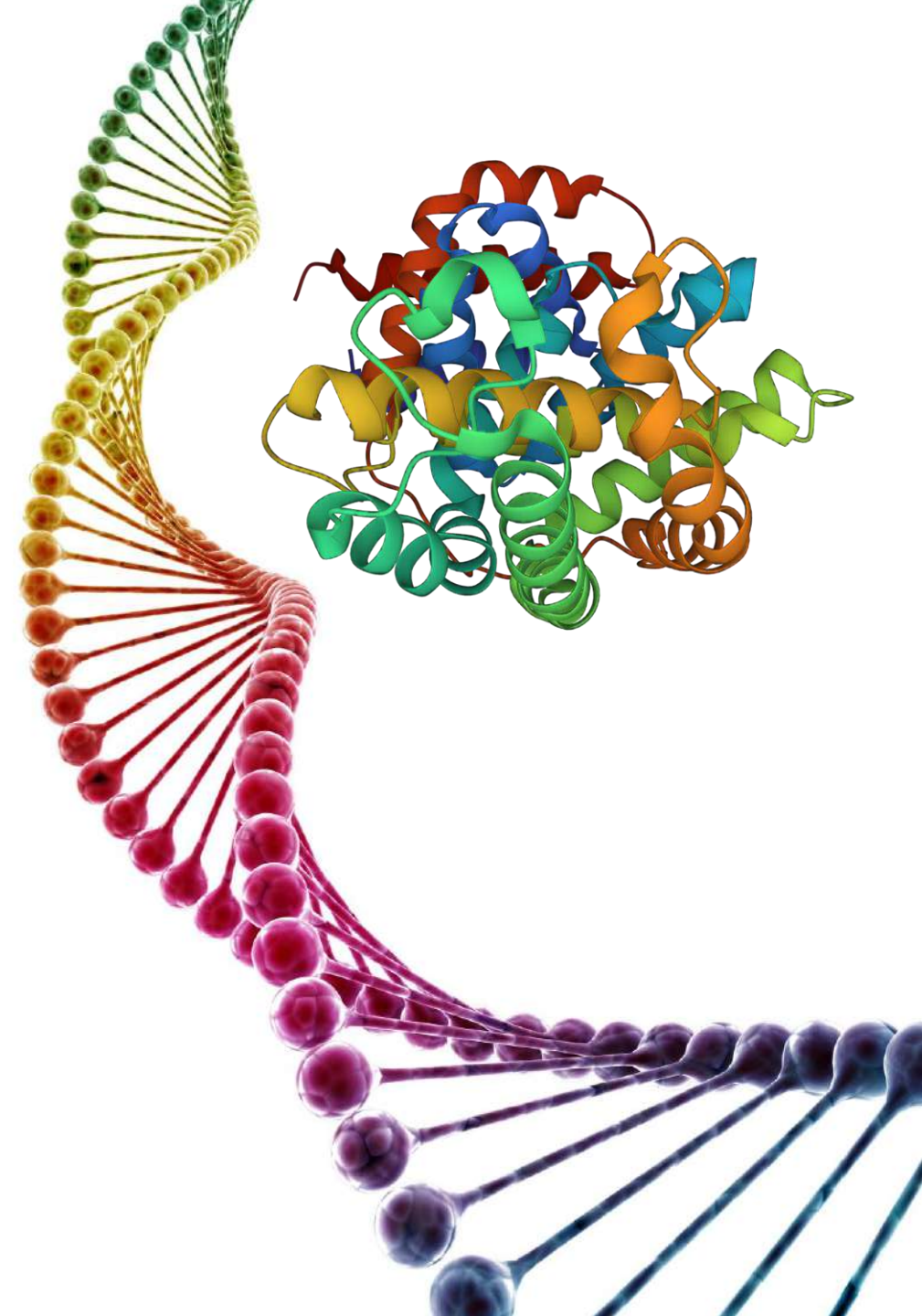




The importance of Proteomics in understanding disease: Biomarkers

- Genetic material is fairly static
- Proteins provide a real-time fingerprint of the biology
- Proteins can undergo a myriad of modifications, each version performing a different function
- This complexity makes protein samples very difficult to analyse!

Proteomics is poised to be the future of clinical diagnostics!



ReSyn Polymer Technology



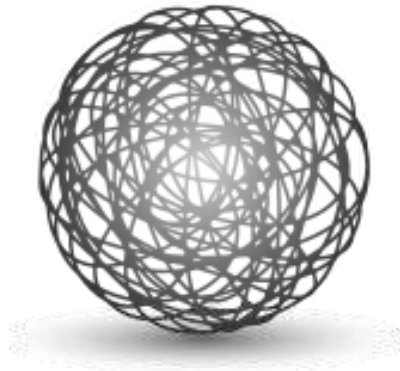
Solid Microparticles

- Binding limited to surface
- Small: increase surface area
- Paramagnetic
- Poor performance



Porous Microparticles

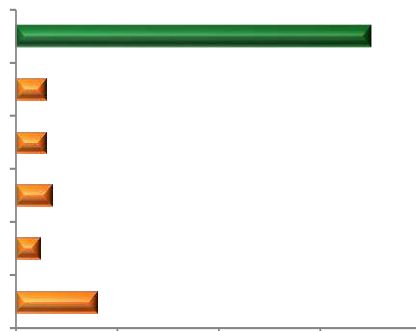
- Cracked/porous surface
- Increased surface area
- Increased capacity
- Intermediate performance



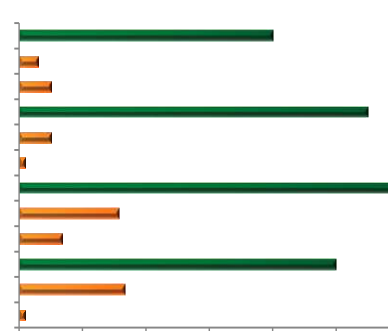
ReSyn Microparticles

- Hyper-porous polymer
- High capacity
- Exceptional performance
- WO2009057049

Superior Features



Functional Group Density



Capacity

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SI, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) Title: EMULSION-DERIVED PARTICLES

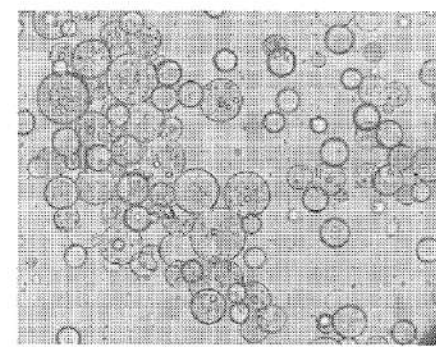
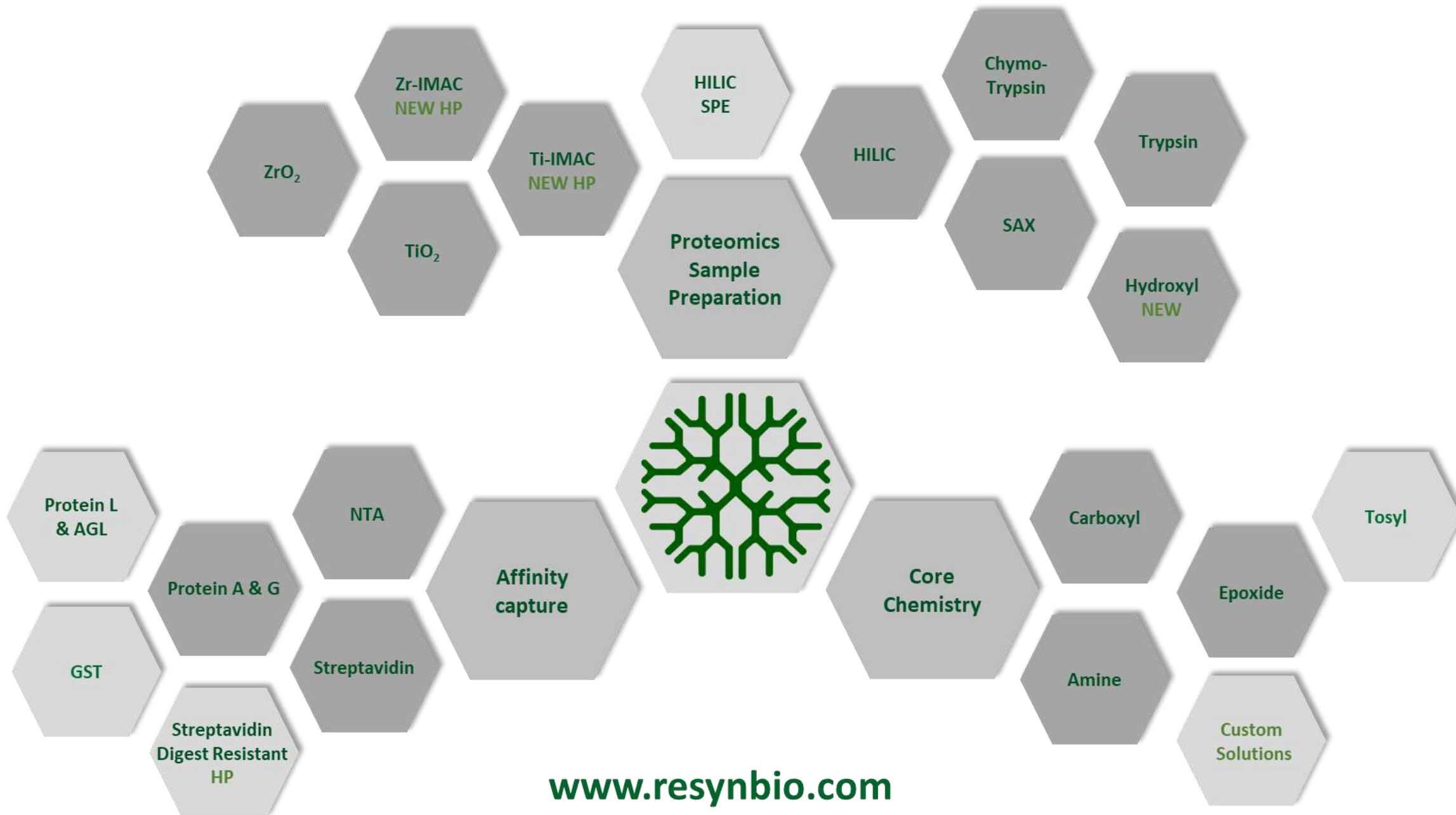


FIG 1

(57) Abstract: An emulsion-derived particle comprises a lattice of polymeric strands cross-linked by means of a cross-linking agent, and interstitial openings adjacent and around the strands. Functional groups are provided on the lattice and proteins and/or modified proteins can react with these, thereby to be bonded to the lattice and hence immobilised.

WO 2009/057049 A2



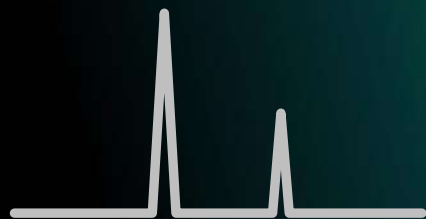
www.resynbio.com

Why target the life-sciences
research and development labs?

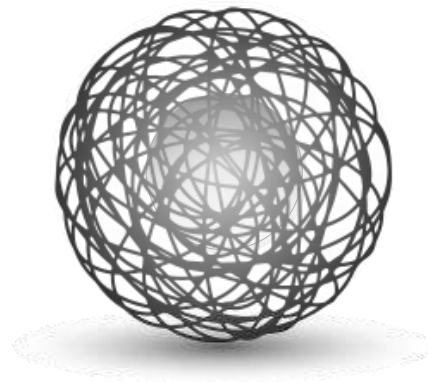
To penetrate new **diagnostic** and
clinical screening applications



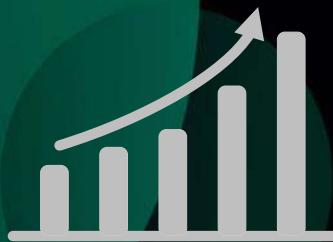
SCALE-UP &
INTEGRATION OF
WORKFLOWS



SIMPLER



BETTER

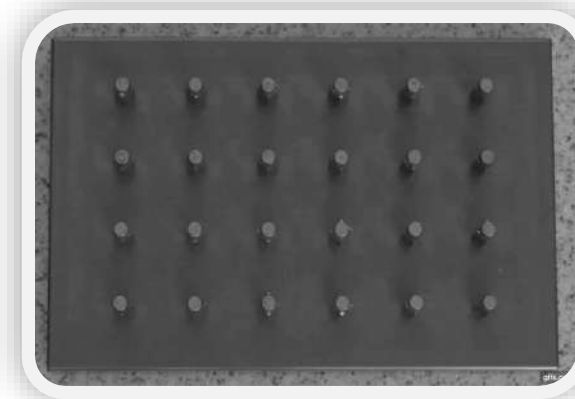


AWARD WINNING
HYPER-POROUS
TECHNOLOGY WITH
HIGH FUNCTIONAL
GROUP DENSITY

MAGNETIC BEADS
ENGINEERED FOR
AUTOMATION AND
THROUGHPUT



FASTER



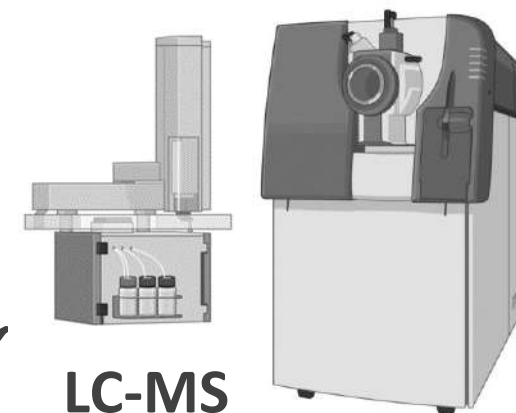
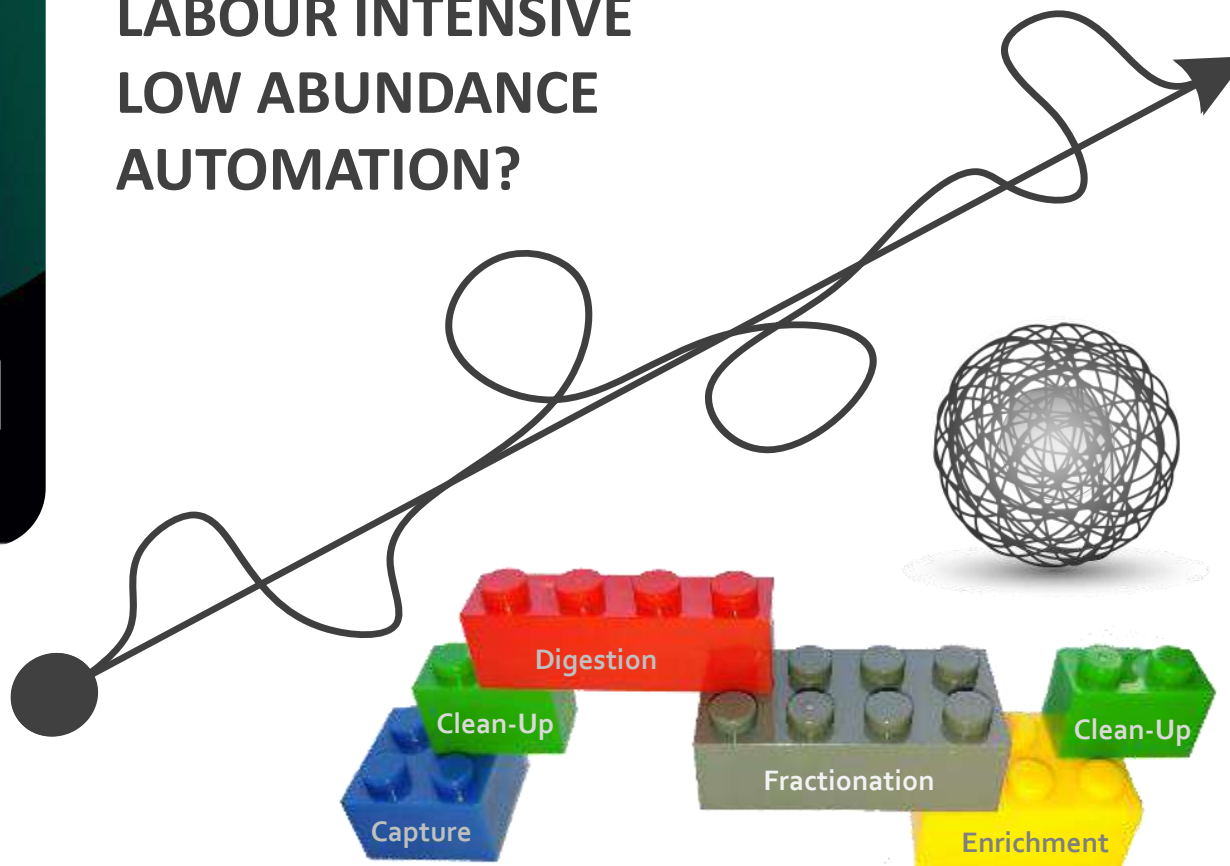


PROBLEM



BIOLOGICAL
SAMPLE

WIDE VARIETY OF SOURCE MATERIALS
HIGH COMPLEXITY SAMPLES
WIDE DYNAMIC RANGE
LABOUR INTENSIVE
LOW ABUNDANCE
AUTOMATION?



LC-MS

BIG DATA

SOLUTION



STREAMLINED & EFFICIENT WORKFLOWS

Global Partnering Strategy for Technology Integration

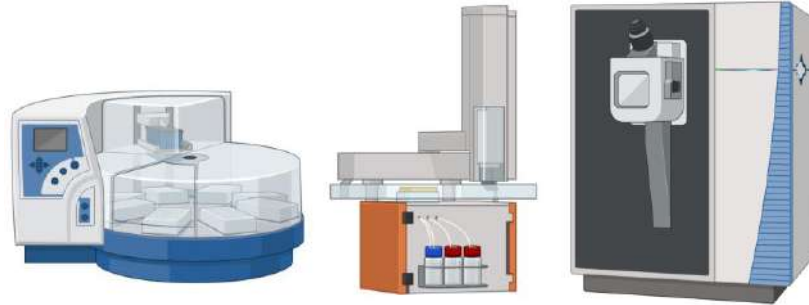
Research and development partnership



OLSEN GROUP

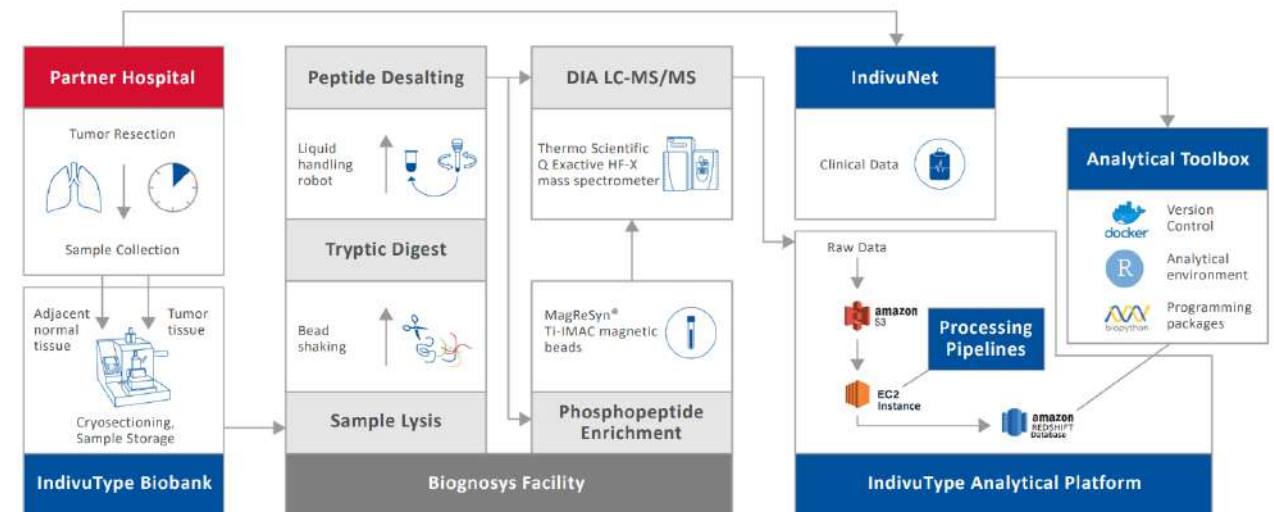
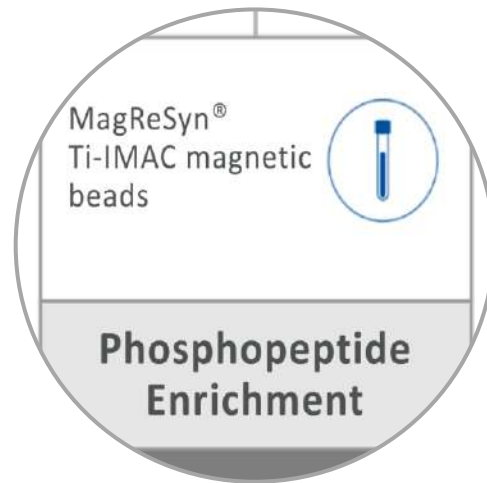


EVOLSEP



BIOGNOSYS
PROTEOMICS - NEXT GENERATION

indivumed



Products adopted for high-throughput profiling of non-small cell lung cancer tissues



PROTEOMIC FORUM | EUPA 2022

XIV Annual Congress of the European Proteomics Association
3-7 April 2022 | Leipzig/Germany | www.preotomic-forum.com



71st CONFERENCE

Mass Spectrometry
and Allied Topics

June 4 - 8, 2023



SHORT COURSES
June 3 & 4

#ASMS2023

Houston

International Marketing Campaign

- Sponsoring Scientific conferences and trade shows, primarily in US and Europe (target market)
- Scientific publications using our products are a highly valuable source of marketing to our customers
 - resynbio.com/method-library/
- Social media and press releases
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30 January -
3 February
2023

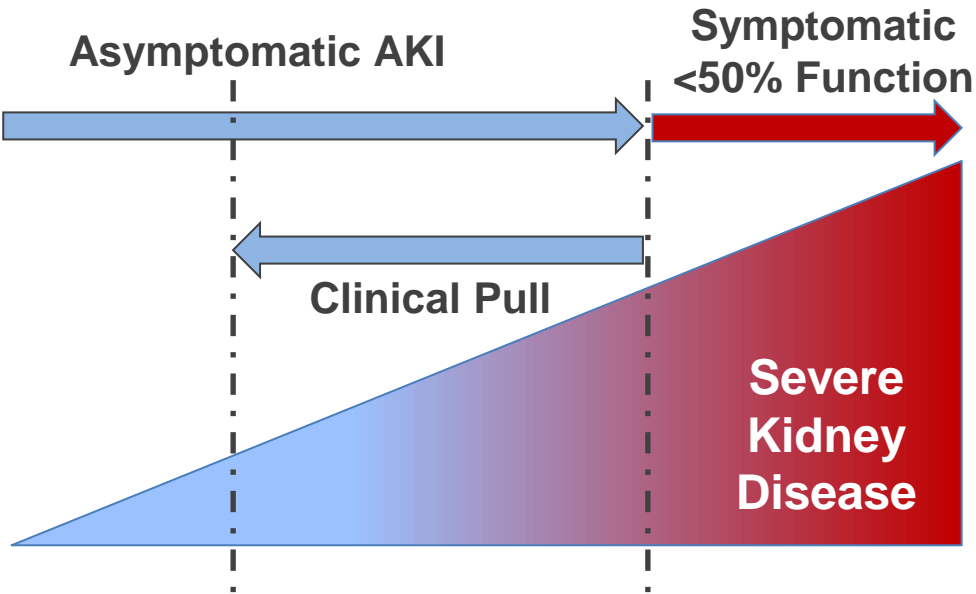
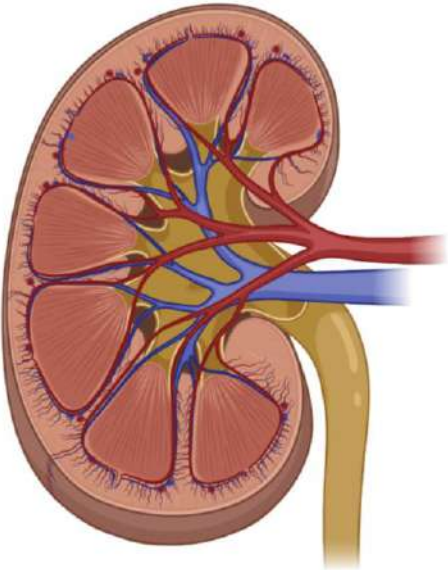
Stellenbosch SOUTH AFRICA



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Omics-enabled detection of Acute Kidney Injury (AKI)



Financial Burden of AKI

- Diagnosis: R15-20K pp
- R200-250K p.p. dialysis
 - <50% of patients can be accommodated
- R350 – R450K p.p. ESRD treatment
 - <1.5% of patients can be treated
- **100 billion € - Annual cost of CKD treatment in EU**



High Throughput Cancer Biomarker Discovery Platform



~3% Asian Ancestry ~1% Other

96% European Ancestry

1.7 M Samples

373 Studies

2009

**Genomics research is
failing on diversity**

“Certain drugs may be less effective, or even unsafe, in some populations because of genetic differences.”

Popejoy & Fullerton, Nature

~16% Asian Ancestry ~3% Other

81% European Ancestry

35 M Samples

2511 Studies

2016

**Proteomics is lagging
even further behind!**

“Cancer shows vast diversity across the geographic, ethnic, racial and cultural spectrum around the world”

Dr Shubra Ghosh, MD Anderson Cancer Center



(Hard) Lessons learnt through commercialization

- You have to get out there!
- South Africa may not be the right test market for your products...
- MVP does not necessarily work in Biotech
- To build a Biotech economy in SA start-ups should target international markets
- Partner!
- Be prepared for a rainy day...
- It takes TIME





**THANK YOU
QUESTIONS?**