

Proteomics component overview

26 – 27th October 2015

Stoyan Stoychev

CSIR Biosciences

The logo for the Council for Scientific and Industrial Research (CSIR) of South Africa. It features the letters 'CSIR' in a bold, blue, sans-serif font. The 'C' is a large, rounded shape, and the 'S' is a vertical bar with a horizontal top bar. The 'I' is a vertical bar with a horizontal top bar, and the 'R' is a vertical bar with a horizontal top bar and a curved bottom.

our future through science

CSIR: Council for Scientific and Industrial research



9 Units:

- Built environment
- Defense, peace, safety and security
- Information and communications
- Laser technology
- Materials science and manufacturing
- Natural resources and the environment
- Mining innovation
- Modelling and digital science
- Biosciences

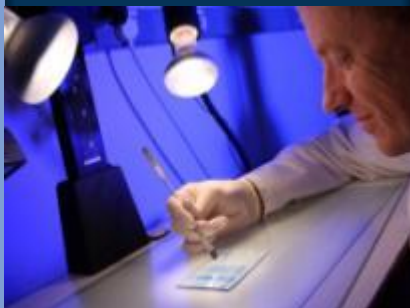
Biosciences Overview



Bioprocessing & Agroprocessing



Biomanufacturing Technologies



Pioneering Health Sciences & BTRI

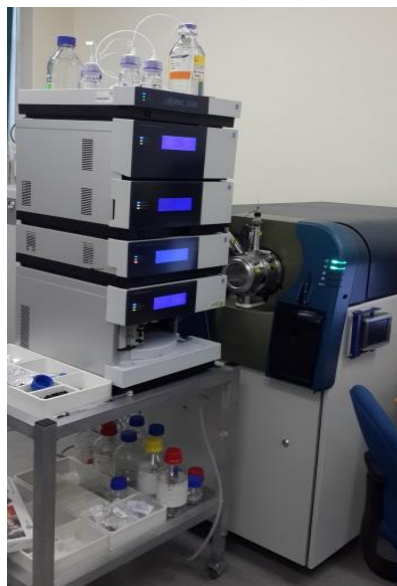


Proteomics and Biomolecule characterization facility

Proteomics

AB Sciex 6600 TripleToF coupled to Dionex cap/nano 2D-UPLC

Magnetic separation platform



- Focus on implementation of automated sample prep workflows based on ReSyn[®] magnetic microspheres incl:
 - Removal of interfering components
 - Protein digestion
 - Phosphopeptide enrichment
- Characterization of complex lysates using discovery and targeted approaches such as DDA, SWATH and MRM-HR

Biomolecule characterization

AB Sciex 6600 TripleToF coupled H/D-X PAL liquid handler and 1100 Agilent HPLC



- Protein Intact mass via LCMS
- 1ry sequence and PTM characterization via LCMSMS and MALDI-TOF
- Protein quantitation using MRM-HR
- Structural characterization via automated H/D-X MS

Proteomics course aims

- Introduce the application of MS-based Proteomics technologies for GMO characterization
- Provide information on:
 - Experimental design
 - Sample preparation
 - Proteomics workflows
 - Data processing
- Ability to set-up and perform various Proteomics workflow
- Make informed decisions on how, why and what insights a set of Proteomics results provide

Proteomics course details

➤ Day 1: Monday, 26th October

➤ Day 2: Tuesday, 27th October

➤ Venue: Knowledge Commons

➤ Venue: CSIR Biosciences (B20)

08h30	Arrive Knowledge Commons	Arrive Biosciences (B20)
09h15	Intro	Intro
09h30	GMOs and Proteomics: Overview	Station 1: Protein Extraction and clean-up
	Dr Eugenia Barros	Sipho Mamputha
10h15	Proteomics: Overview	Station 2: 2DGE set-up
	Mr Ireshyn Govender	Sindiswe Buthelezi
11h00	TEA	TEA
11h30	Mass Spectrometry basics	Station 3: 2DGE data acquisition
	Dr Previn Naicker	Sindiswe Buthelezi
12h00	Experimental design, sample collection and preparation	Station 4: Protein digestion (in-solution and in-gel)
	Dr Stoyan Stoychev	Previn Naicker
12h30	Lunch	Lunch
13h30	MS-based Proteomics workflows: global profiling	Station 5: Automating sample preparation
	Miss Sindisiwe Buthelezi and Mr Ireshyn Govender	Stoyan Stoychev
14h30	Data processing and interpretation	Station 6: MALDI-TOF: set-up and data acquisition
	Dr Stoyan Stoychev	Busiswe Thala
15h00	TEA	TEA
15h30	Closing and Round table discussions	Station 7: LC-MSMS set-up and data acquisition
	All	Ireshyn Govender
16h30	End Day 1	End Day 2

Dr Eugenia Barros (Principal Researcher)

Dr Stoyan Stoychev (Senior Researcher)

Dr Previn Naicker (Post Doc)

Mr Siphso Mamputha (Technician)

Miss Sindisiwe Buthelezi (PhD)

Mr Ireshyn Govender (PhD)

Miss Busisiwe Thala (PhD)