

SABINA: Building Collaborative Partnerships in Natural Products

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SABINA (Southern African Biochemistry and Informatics for Natural Products) is a vibrant and diverse network of researchers focusing on Natural Products. With the understanding that natural products play a significant role in alleviating the interlinked issues of food security, health and nutrition, particularly in developing countries, SABINA proactively implements post-graduate chemistry, biochemistry and bioinformatics programmes to address these issues. SABINA fellows are collaboratively supervised by SABINA staff members at the different network nodes. Through these programmes SABINA develops and strengthens networks that integrate chemical and biological sciences in key Southern African Development Community (SADC) universities. The key focus areas are: Natural Products Chemistry; Biochemistry; Synthetic Chemistry; Bioinformatics; Food; Science Molecular Biology/Functional Genomics.

The network came into existence in 2008 and has grown to include 78 active members (supervisors, alumni and postgraduate students) from Namibia, Malawi, South Africa and Tanzania. Network partners include the Council for Scientific and Industrial Research (CSIR), the Tea Research Foundation of Central Africa (TRFCA), the Universities of Dar es Salaam, Malawi, Namibia, Pretoria, and the Witwatersrand and more recently the University of Johannesburg. Other participating institutions include: the universities of Cape Town, KwaZulu-Natal, the Western Cape and Rhodes University.

SABINA has a strong focus on postgraduate education and network building in Africa. To date SABINA has funded ten (6 MSc and 4 PhD) graduates. Four MSc graduates have been awarded SABINA PhD scholarships. The remaining graduates have returned to their home countries, currently being employed in technical and research positions. By the end of the current phase of SABINA, 25 (10 MSc and 15 PhD) postgraduate degrees would have been funded by the programme.



SABINA fellows and staff at the SABINA Annual Meeting held in Dar es Salaam, Tanzania (October 2014)

Funding

SABINA is one of five RISE (Regional Initiative in Science and Education) networks funded by the Carnegie Corporation of New York, through the Science Initiative Group (SIG) and the Department of Science and Technology of South Africa (DST). A complementary project (POL-SABINA) was funded by the ACP-EU S&T Programme (Africa Caribbean Pacific - European Union Science and Technology Programme) and supported policy development and support actions of the SABINA network. The POL SABINA Project drew to a close in 2013 and contributed training workshops (project management, business management, IP (intellectual property) and scientific writing), mobility of network members and the development of IK (indigenous knowledge) guidelines (drafted in collaboration with SANbio).

Funding from RISE enables SABINA to holistically fund postgraduate projects. SABINA fellows are provided with a comfortable living allowance, tuition fees as well as project costs which are allocated to their supervisors. SABINA fellows are also able to travel between the SABINA nodes to access infrastructure and conduct experiments under the supervision of their co-supervisors. Competitive conference funds are awarded to SABINA fellows to present their research findings at local and international conferences. In addition the funds also support network activities for annual meetings, funding for upgrading infrastructure at nodes outside South Africa and post-doctoral research funds for SABINA alumni.

In 2014 the Department of Science and Technology (DST) of South Africa, through the International Cooperation and Resources Programme, awarded the SABINA network funds to increase the participation of South African Researchers in the SABINA network, provide conference funds for South African students (conducting natural product research) and exchange visits of South African researcher to SABINA nodes outside SA to present training workshops.



Delegates the attended the SABINA SA stakeholder meeting held in February 2015, from left to right (front row): Prof Gail Hughes, Prof Zodwa Dlamini, Prof Charles de Koning, Dr Gerda Fouche, Mrs Jessika Naidoo, Prof Sylvester Lyantagaye, (back row): Prof Oleg Reva, Dr Ereck Chakauya, Dr John Becker, Prof Ian Dubery, Dr Paul Steenkamp, Dr Heino Heyman, Prof Vinesh Maharaj, Dr Stephen Amoo and Dr Farhahna Allie.

Projects

Research focuses on increasing the understanding of useful plants and fungi indigenous to Africa, more especially in SABINA partner countries, through the study of activity screening assays, biosynthetic pathway evaluation, compound characterisation, gene expression, synthetic production and genomic studies relating to genetic diversity. Promising outcomes from these projects can be channelled to viable products either in the partner countries or with the assistance of product development specialists at the CSIR.

Current projects include:

- Antimicrobial and antiviral activity of plants indigenous to Namibia, Malawi and Tanzania
- Synthesis of biologically active compounds against cancer, synthesis of homologous antibiotics and antimalarial drugs
- Comparative genomic studies of *Bacillus* and other bacterial species promoting plant growth
- Genomic studies to identify drought tolerance, other desired traits and impacts of mechanical harvesting of tea (*Camellia sinensis*)
- Cosmeceutical study of the anti-ageing properties of plants indigenous to South Africa

Looking to the future, SABINA wishes to build on the successes of the POL-SABINA and RISE programme and extend our reach in Africa and globally. SABINA wishes to strengthen links with traditional healers, communities and organisations that have interest in natural product research. More especially, we wish to establish links with organisations willing to

fund projects that are collaborative with the possibility of being university based research to support future postgraduate students.

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