

WITS RESEARCH INSTITUTE FOR MALARIA NEWSLETTER

March 2020 | Issue 1



WRIM AT A GLANCE

Mission

To reduce malaria disease burden through research, education, innovation and policy change.

Vision

"The Wits Research Institute for Malaria aims to produce top quality research and researchers that will benefit malaria control in Africa and place it amongst the leading malaria research groups in the world."





Prof. Lizette Koekemoer



Prof. Robyn van Zyl

LETTER FROM THE CO-DIRECTORS

Prof. Lizette Koekemoer and Prof. Robyn van Zyl are the co-directors of WRIM and heads of the entomology and pharmacology units respectively

“It is with great excitement that WRIM announces the launch of the first newsletter! We hope that you enjoy this new platform for keeping up to date with the numerous events taking place at WRIM.

2019 was a year of challenges as well as highlights in both our professional and personal lives. We hope that 2020 will be exhilarating and rewarding for us all. WRIM has grown since 2013 through the guidance and wisdom of the original founders, Profs Maureen Coetzee and Theresa Coetzer, and we (staff and students) hope to build on their legacy.

We would like to extend our gratitude to all in the marketing team for their initiative and work to produce this newsletter, and to all who contributed to this first edition!”

Enjoy the year and good luck with all your endeavours in 2020!

LETTER FROM THE EDITOR

Welcome to the first issue of our newsletter. This issue introduces you to WRIM and its partners. It also highlights various outputs from this past year, including conference attendances and publications. Additionally, this newsletter highlights upcoming events for 2020 and introduces new staff members and students. Please have a look at our exciting competition and don't forget to follow our Twitter account to stay updated with all things WRIM-related. Feel free to contact me should you wish to contribute to the content of upcoming WRIM newsletters. I hope you enjoy this issue.

Bianca E Silva

biancaes@nicd.ac.za

“Science and everyday life cannot and should not be separated”

– Rosalind Franklin

WRIM 2019 | OUTPUTS

1. Conference Proceedings

Thank you to all who represented WRIM at the following conferences in 2019:

Aswat, A.S., Ekoka, E., Nardini, L., Koekemoer, L.L. 2019. The role of 20-hydroxyecdysone on immune-responsive antimicrobial peptides. Molecular Biosciences Research Thrust annual MBRT Research Day. 26 November. Johannesburg, South Africa. Poster Presentation.

Birkholtz, L., Chibale, K., Koekemoer, L.L., Klumperman, B., Banasiak, J. 2019. Working together towards Malaria Elimination: A community of practice evaluating malaria interventions strategies. Malaria Research Symposium: 30 Sept-1 Oct, Stellenbosh, South Africa.

Bloch, N., Dahan-Moss, Y., Koekemoer, L.L. 2019. The role of a sex-limited esterase (EZ976679) on *Anopheles funestus* males. 5th Southern Africa Malaria Research Conference: Co-operation for Elimination, 30 July- 1 August, Pretoria, South Africa.

Bloch, N., Dahan-Moss, Y., Koekemoer, L.L. 2019. The role of a sex-limited esterase (EZ976679) on *Anopheles funestus* males. 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (poster).

Burke, A.M., Duncan, F.D., Brooke, B.D. 2019. How do mosquitoes survive the winter? 21st Entomological Conference of Southern Africa, 8 - 11 July, Durban, South Africa.

Dandare MM, Menezes D, Karstaedt K, Miot J, van Zyl RL. Management of Severe Malaria In A Tertiary Hospital Setting In Soweto, South Africa. SA Society of Basic & Clinical Pharmacology, 5-7 September 2019, Pretoria, South Africa (poster).

Ekoka, E., Nardini, L., Aswat, A., Dahan-Moss, Y., Koekemoer, L.L. 2019. Ecdysone signaling regulates vitellogenesis and the microbiome in *Anopheles arabiensis* females. Molecular Biosciences Research Thrust annual MBRT Research Day. 26 November. Johannesburg, South Africa - Poster Presentation Prize.

Ekoka, E., Nardini, L., Aswat, A., Dahan-Moss, Y., Koekemoer, L.L. 2019. Ecdysone signaling regulates vitellogenesis and the microbiome in *Anopheles arabiensis* females. American Society of Tropical Medicine and Hygiene 68th Annual meeting. 20-24 November, Maryland, USA.

Ekoka, E., Nardini, L., Aswat, A., Dahan-Moss, Y., Koekemoer, L.L. 2019. Ecdysone signaling regulates vitellogenesis and the microbiome in *Anopheles arabiensis* females. John Hopkins University, Annual meeting. 20-24 November, Maryland, USA.

Ekoka, E., Nardini, L., Aswat, A., Dahan-Moss, Y., Koekemoer, L.L., 2019. The ecdysone receptor regulates vitellogenesis in *Anopheles arabiensis* mosquitoes. 5th Southern Africa Malaria Research Conference: Co-operation for Elimination, 30 July- 1 August, Pretoria, South Africa.

E Silva, B., Koekemoer, L.L., Dahan-Moss, Y. L. 2019. Live bacteria are culturable from the midguts of *Anopheles* mosquitoes stored on silica after several weeks of preservation. Molecular Biosciences Research Thrust annual MBRT Research Day. 26 November. Johannesburg, South Africa. Poster Presentation.

Felamboahangy, L.N., Kaiser, M., Munhenga, G., Koekemoer, L.L. 2019. Optimizing larval diet and investigating use of an artificial bloodfeeding system in a laboratory reared *Anopheles funestus* strain. 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (Poster).

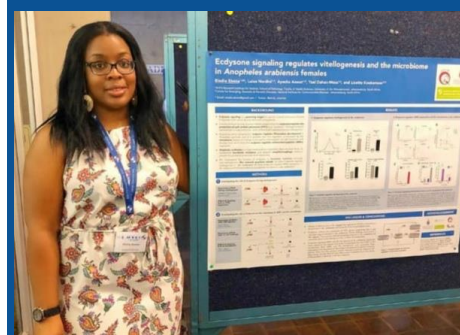
Hsiang, M.S., Ntuku, H., Roberts, K. W., McCreesh, P., Tambo, M., Dufour, Mi-Suk K., Whittemore, B., Medzihradsky, O.F., Prach, L.M., Siloka, G., Siame, N., Smith-Gueye, C., Schrubbe, L., Wu, L., Scott, V., Tessema, S., Greenhouse, B., Gani, Z., Mirza, F., Aerts, A., Erlank, E., Koekemoer, L.L., Sturrock, H., Mwilima, A., Katokele, S., Uusiku, P., Bennett, A., Smith, J., Kleinschmidt, I., Mumbengegwi, D., Gosling, R. 2019. The safety and efficacy of malaria reactive focal mass drug administration (rfMDA) and reactive vector control (RAVC) to reduce malaria incidence, a cluster-randomised controlled two-by-two factorial design trial from the low-endemic setting of Namibia. The Malaria

WINNER: MBRT BEST POSTER PRESENTATION

“Ecdysone signaling regulates vitellogenesis and the microbiome in *Anopheles arabiensis* females”

Ekoka, E., Nardini, L., Aswat, A., Dahan-Moss, Y., Koekemoer, L.L.

Congratulations Elodie on receiving the title of best poster presentation at the Wits MBRT Research Day 2019!



Elodie Ekoka proudly standing by her winning poster.

Endgame: Innovation in Therapeutics, Vector Control and Public Health Tools (G1), Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation, October 30-November 2, Addis Ababa, Ethiopia.

Kalonji, M.N., Koekemoer, L.L., Dahan-Moss, Y. 2019. The effects of sugar diet on male biology of *Anopheles funestus* (Diptera: Culicidae). 5th Southern Africa Malaria Research Conference: Co-operation for Elimination, 30 July- 1 August, Pretoria, South Africa.

Koekemoer, L.L., van Zyl, R., Brooke, B.D. 2019. Malaria vector research and support. Malaria Research Symposium: 30 Sept-1 Oct, Stellenbosch, South Africa.

Lala S, H Govender, S Oliver, N Koorbanally, van Zyl RL. The antiplasmodial and insecticidal effects of Dihydroquinoline-Carbothioamide derivatives. SA Society of Basic & Clinical Pharmacology, 5-7 September 2019, Pretoria, South Africa (poster).

Letinić, B., Dahan-Moss, Y., Koekemoer, L.L. 2019. Akirin knockdown: A potential vector control tool for the African malaria vector, *Anopheles arabiensis*. 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (talk).

Letinić, B.D., Dahan-Moss, Y. L Koekemoer, L.L. 2019. Akirin immunisation for the control of *Anopheles arabiensis* infestations. Molecular Biosciences Research Thrust annual MBRT Research Day. 26 November. Johannesburg, South Africa. Oral Presentation.

Lobb, L., Koekemoer, L.L., Kaiser, M., Munhenga, G. 2019. Evaluating the potential of using polyacrylamide beads to increase the efficacy of current *Anopheles* surveillance methods in a malaria control programme. 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (talk).

Lobb, L.N., Kaiser, M.L., Munhenga, G., Koekemoer, L.L. 2019. Use of REDCap™ to develop a database for routine entomological surveillance. 5th Southern Africa Malaria Research Conference: Co-operation for Elimination, 30 July- 1 August, Pretoria, South Africa.

Lobb, L.N., Kaiser, M.L., Munhenga, G., Koekemoer, L.L. 2019. Opportunities and challenges during development of a data management system for routine entomological surveillance of malaria vector mosquitoes. BioAfrica Conference. 26 – 28 August, ICC, Durban.

Malimabe T, Oliver, Sewpersad S, Koorbanally N, van Zyl RL. The antimalarial and toxicological properties of quinoxaline-chalcone derivatives. SA Society of Basic & Clinical Pharmacology, 5-7 September 2019, Pretoria, South Africa (poster).

Markus, M.B., Koekemoer, L.L., van Zyl, R. 2019. Wits Research Institute for Malaria. American Society of Tropical Medicine and Hygiene 68th Annual meeting. 20-24 November, Maryland, USA.

Mashatola, T., Ndo, C., Koekemoer, L.L., Dandalo, L., Wood, O. Malakoane, L., Poumachu, Y., Lobb, L., Kaiser, M., Bourtzis, K., Munhenga, G. 2019. Progress on the development of sex-separation methods for Sterile Insect Technique applications against the Malaria Vector, *Anopheles arabiensis*. 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (talk).

Small, S.T., Labbé, F., Lobo, N.F., Koekemoer, L.L., Sikaala, C.H., Neafsey, D.E., Fontaine, M.C., Besansky, N.J. 2019. Speciation with introgression in the *Anopheles funestus* complex. EMBO Conference on Molecular and Population Biology of Mosquitoes and Other Disease Vectors: Vector and Disease Control. 22-26 July, Kolymbari, Crete.

Thabana P, Sewpersad S, Koorbanally N, Coetzee M, van Zyl RL. Antiplasmodial And Toxicological Properties of Benzimidazoles And Imidazole Derivatives. SA Society of Basic & Clinical Pharmacology, 5-7 September 2019, Pretoria, South Africa (poster).

van Zyl RL, Jansen van Vuuren N, Mustapha O, M Coetzee. The effect of metal chelating terpenoids on the *Plasmodium* malaria and *Anopheles* vector. Symposium – Malaria Research: Crossing Boundaries, 30 September-1 October 2019, Stellenbosch, South Africa.

Wood, O.R., Kaiser, M.L., Dandalo, C.L. Samuel, M., Mashatola, T., Ntoyi, N., Lobb, L., Manana N.P., Slabbert J., Zeevaart J.R., Koekemoer, L.L., Brooke B.D. Munhenga, G. 2019. Sit ready to go: current status of the South African pilot project “assessing the viability feasibility of the sterile insect technique in area wide-integrated pest management against the major malaria vector, *Anopheles arabiensis* in a South African setting”. BioAfrica Conference. 26 – 28 August, ICC, Durban, South Africa.

Zawada, J., Dahan-Moss, Y., Koekemoer, L.L. 2019. The role and validation of CPRR-1 in *Anopheles funestus* male genitalia rotation 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (talk).

Zengenene, M.P., Munhenga, G., Koekemoer, L.L. 2019. Characterisation of the life history parameters of a laboratory reared *Anopheles funestus* (Diptera: Culicidae) colony. 5th Southern Africa Malaria Research Conference: Co-operation for Elimination, 30 July- 1 August, Pretoria, South Africa.

Zengenene, M.P., Munhenga, G., Koekemoer, L.L. 2019. Characterisation of the life history parameters of a laboratory reared *Anopheles funestus* colony. 21st Entomological Conference of Southern Africa, 8th-11th July, Durban, South Africa (Poster).

Thank you and congratulations, we cannot wait to see the conference outputs for 2020!

2. Publications

Congratulations to all WRIM researchers who authored or co-authored the following publications in 2019:

Adeogun, A.O., Brooke, B.D., Olayanju, D.R., Adegbehingbe, K., Oyeniyi, T.A., Olakiigbe, A.K. & Awolola, T.S. 2019. Test for association between dieldrin resistance and 2La inversion polymorphism in *Anopheles coluzzii* from Lagos, Nigeria. *Tropical Biomedicine* 36(3): 1–7. Impact factor: 0.719.

Barnard, K., Jeanrenaud, A.C.S.N., Brooke, B.D. & Oliver, S.V. 2019. The contribution of gut bacteria to insecticide resistance and the life histories of the major malaria vector *Anopheles arabiensis* (Diptera: Culicidae). *Scientific Reports* 9:9117. Impact Factor: 4.609.

Brooke, B.D. 2019. Mosquitoes and malaria control – a complex problem for entomologists to unravel. *Outlooks on Pest Management*. 30: 1-4, DOI: 10.1564/v30_aug_00

Burke, A.M., Brooke, B.D. & Duncan, F.D. 2019. Metabolic rate does not vary with seasonal change in *Anopheles arabiensis* adults in South Africa. *Journal of Insect Physiology*. 118:103942. Impact factor: 2.862.

Burke, A., Dahan-Moss, Y., Duncan, F., Qwabe, B., Coetzee, M., Koekemoer, L. & Brooke, B. 2019. *Anopheles parensis* contributes to residual malaria transmission in South Africa. *Malaria Journal* 18:257. Impact factor: 2.798.

Finda, M.F., Moshi, I.R., Monroe, A., Limwagu, A.J., Nyoni, A.P., Swai, J.K., Ngowo, H.S., Minja, E.G., Toe, L.P., Kaindoa, E.W., Coetzee, M., Manderson, L. & Okumu, F.O. 2019. Linking human behaviours and malaria vector biting risk in south-eastern Tanzania. *PLoS One* 14(6): e0217414. Impact factor: 2.766.

Flannery E. L., Markus, M.B. & Vaughan, A.V. 2019. *Plasmodium vivax*. *Trends in Parasitology* <https://doi.org/10.1016/j.pt.2019.04.005>

Jeanrenaud, A.C.S.N., Brooke, B.D. & Oliver, S.V. 2019. The effects of larval organic fertiliser exposure on the larval development, adult longevity and insecticide tolerance of zoophilic members of the *Anopheles gambiae* complex (Diptera: Culicidae). *PLoS One* 14(4): e0215552. Impact factor: 2.766.

Kaindoa, E.W., Ngowo, H.S., Limwagu, A.J., Tchouakui, M., Hape, E., Abbasi, S., Kihonda, J., Mmbando, A.S., Njalambaha, R.M., Mkandawile, G., Bwanary, H., Coetzee, M. & Okumu, F.O. 2019. Swarms of the malaria vector *Anopheles funestus* in Tanzania. *Malaria Journal* 18:29. Impact factor: 2.798.

Kumar, M., Okombo, J., Mambwe, D., Taylor, D., Lawrence, N., Reader, J., van der Watt, M.E, Fontinha, D., Sanches-Vaz, M., Bezuidenhout, B., Lauterbach, S., Liebenberg, D., Birkholtz, L.M. & Coetzee, T.L., Prudêncio, M., Egan, T.J., Wittlin, S. and Chibale, K. 2019. Multistage Antiplasmodium Activity of Astemizole analogues and inhibition of hemozoin formation as a contributor to their mode of action. *ACS Infect Dis*, 5:303–315.

Lobb, L.N., Munhenga, G., Yamada, H. & Koekemoer, L.L. 2019. The effect of egg storage of laboratory reared *Anopheles arabiensis* (Diptera: Culicidae) on egg hatch synchronisation and effect on immature stage development. *African Entomology* 27:360-365. Impact factor: 0.536.

Markus, M.B 2019. *Plasmodium*: Yet more don'ts. *Trends in Parasitology* 35: 101-102. (Letter) <https://doi.org/10.1016/j.pt.2018.11.006>

Markus, M.B 2019. Killing of *Plasmodium vivax* by Primaquine and Tafenoquine. *Trends in Parasitology* 35: 857-859. (Spotlight) <https://doi.org/10.1016/j.pt.2019.08.009>

Mathebula B, Butsi K.R., van Zyl R.L., Jansen van Vuuren N.C., Hoppe H.C., Michael J.P., de Koning C.B. & Rousseau A.L. 2019. Preparation and antiparasmodial activity of 3',4'-dihydro-1'H-spiro(indoline-3,2'-quinolin)-2-ones. *Chemical Biology & Drug Design* ,94:1849-1858. doi: 10.1111/cbdd.13598

Matowo, N.S., Abbasi, S., Munhenga, G., Tanner, M., Mapua, S.A., Oullo, D., Koekemoer, L.L., Kaindoa, E., Ngowo, H.S., Coetzee, M., Utzinger, J. & Okumu, F.O. 2019. Fine-scale spatial and temporal variations in insecticide resistance in *Culex pipiens* complex mosquitoes in rural south-eastern Tanzania. *Parasites & Vectors* 12:413. Impact Factor: 3.163.

Mayoka, G., Njoroge, M., Okombo, J., Gibhard, L., Sanches-Vaz, M., Fontinha, D., Birkholtz, L.M., Reader, J., van der Watt, M., Coetzer, T.L., Lauterbach, S., Churchyard, A., Bezuidenhout, B., Egan, T.J., Yeates, C., Wittlin, S., Prudêncio, M. & Chibale, K. 2019. Structure-Activity Relationship Studies and Plasmodium Life Cycle Profiling Identifies Pan-Active N-Aryl-3-trifluoromethyl Pyrido[1,2-a]benzimidazoles Which Are Efficacious in an in Vivo Mouse Model of Malaria. *Journal of Medicinal Chemistry* 62:1022-1035. (doi: 10.1021/acs.jmedchem.8b01769). Impact Factor: 6.253

Munedzimwe, T.C., van Zyl, R.L., Heslop, D.C., Edkins, A.L. & Beukes, D.R. 2019. Semi-Synthesis and Evaluation of Sargahydroquinone Acid Derivatives as Potential Antimalarial Agents. *Medicines*, 6: 47; doi:10.3390/medicines6020047

Pillay, E., Khodajji, S., Bezuidenhout, B.C., Litshie, M. & Coetzer, T.L. 2019. Evaluation of automated malaria diagnosis using the Sysmex XN-30 analyser in a clinical setting. *Malaria Journal* 18:15 (doi.org/10.1186/s12936-019-2655-8). Impact factor: 2.798.

Raman, J., Allen, E., Workman, L., Mabuza, A., Swanepoel, H., Malatje, G., Frean, J., Weisner, L., Barnes, K.I. 2019. Single low dose primaquine for *Plasmodium falciparum* transmission blocking in a low-intensity transmission area in South Africa: an open-label randomized controlled trial. *Malaria Journal* 18:209. Impact factor: 2.798.

Yunta, C., Hemmings, K., Stevenson, B., Koekemoer, L.L., Matambo, T., Pignatelli, P., Voice, M., Nász, S. & Paine, M.J.I. 2019. Cross-resistance profiles of malaria mosquito P450s associated with pyrethroid resistance against WHO insecticides. *Pesticide Biochemistry and Physiology* 161: 61-67. Impact factor: 3.44.

We look forward to all the publications that we know the WRIM team will produce this year. Good luck in all your research endeavours.

WRIM 2019 PARSA

JUNIOR WO NEITZ MEDAL WINNER

Congratulations to Obaidiyah Mustapha for being Awarded the 2019 PARSA Junior WO Neitz Medal for her MSc (Med)(Pharmacology) dissertation entitled "The effects of terpenes on the life cycle of the malaria parasite". Obaidiyah is the first recipient at WITS University since the inception of the award in 2007. Supervisors Prof RL van Zyl and Prof M Coetzee.

Congratulations on your super achievement.



Department of Health (DoH) Meeting

Several senior scientists from WRIM are members of the South African Malaria Elimination Committee (SAMEC) and attended the first meeting in Pretoria in January 2020 to provide support, expertise and guidance with regards to the South African strategic goal to eliminate malaria by 2030. The SAMEC meeting was held directly after specialised subcommittee meetings, e.g. the Subcommittee on Vector Control (SVC) chaired by Prof. Basil Brooke.

MOSASWA Launch

WRIM attended the launch of the cross-border MOSASWA (**M**ozambique, **S**outh Africa and **S**waziland) malaria control Global Grant Fund at Nando's Kitchen, Johannesburg. Together with the Honourable Minister of Health, Dr Zweli Mkhize, attendees were thoroughly entertained by the world-famous Ndlovu Youth Choir!

Read more about this collaborative initiative at: <https://mesamalaria.org/mesa-track/mosaswa-cross-border-initiative>



Photo (left to right): Prof Basil Brooke, Dr Maria Kaiser, Dr Jaishree Raman, Prof Lizette Koekemoer, Prof Robyn van Zyl, and Prof Lucille Blumberg attending the MOSASWA launch.

UPCOMING EVENTS

April
20

WRIM RESEARCH DAY

NICD, Sandringham, South Africa

May
18-20

BioMalPar XVI: Biology and Pathology of the Malaria Parasite

EMBL, Heidelberg, Germany

<https://www.embl.de/training/events/2020/BMP20-01/>

May
18-21

First Commonwealth Chemistry Congress

Trinidad and Tobago Campus of the University of West Indies

<http://www.rsc.org/events/detail/40292/first-commonwealthchemistry-congress>

May
25-26

World Congress on Microbiology

Amsterdam, Netherlands

<https://conferenceera.com/microbiology-conference/registration>

July
9-11

6th International Conference on Public Health

Bangkok, Thailand

<https://publichealthconference.co/>

July
19-24

XXVI International Congress of Entomology

Helsinki, Finland

<https://ice2020helsinki.fi/>

August
2-4

6th Southern Africa Malaria Research Conference

Pretoria, South Africa

<http://malariaconference.mrc.ac.za/>

Sept
6-9

The International Congress on Parasites of Wildlife (PARSA)

Skukuza, Kruger National Park, South Africa

<https://www.parsa.ac.za/parsa-2020>

Sept
20-24

The 20th International Congress for Tropical Medicine and Malaria (ICTMM2020)

Bangkok, Thailand

<https://ictmm2020.org/>

Oct
12-17

16th World Congress on Public Health 2020 Roma Convention Center

La Nuvola Rome, Italy

<https://wcph2020.com/index.php>

Nov
15-19

American Society for Tropical Medicine & Hygiene (ASTMH) 69th Annual Meeting

Toronto, Canada

<https://www.astmh.org/>

WRIM 2020 | WHAT TO EXPECT

We would like to extend the warmest welcome to our new staff and students.

NEW MEMBERS OF STAFF

Everyone, Meet Pinky

Joining us over at VCRL, NICD, is our new epidemiologist, Pinky Manana.



Pinky has a Master's in Public Health (Epidemiology), which she acquired from the University of Pretoria. Pinky's duties include, but are not limited to, research projects, surveillance support, data analysis and outbreak investigations with main focus on malaria. Pinky is currently involved with the SIT project as a community engagement expert. The Community engagement component of the SIT project aims to increase overall community knowledge (possible risks and benefits) on the use of SIT as an additional vector control strategy towards malaria elimination in South Africa.

"I love laughing/ I am always smiling. There is never a dull moment when I am around."

-Pinky

Be sure to introduce yourself to Pinky if you haven't already, she is a ray of sunshine.

Welcome to the team, Pinky.

NEW STUDENTS

Priyanka Agarwal

PhD in Pharmacology

Priyanka's PhD project will be based on designing drugs that have potential to treat malaria.

Priyanka relocated to Johannesburg in 2016 from India. Priyanka has a Master of Philosophy in industrial methods of chemical analysis from the Indian Institute of Technology, Roorkee (formerly, University of Roorkee), India. She also has a M.Sc. in organic chemistry from H. N. B. Garhwal University, Dehradun, India.



Nashrin Patel

Master of Science in Medicine

Nashrin's project is based on the characterisation of immune responses to bacterial stimulation in the *Anopheles gambiae* complex.



FUN FACT: *"I spend my free time playing video games."*

Ashmika Singh

Master of Science in Medicine

Ashmika's project is based on broadly assessing vector competence in species of the *An. gambiae* complex by characterising their midgut bacteria.



FUN FACT: *"I'm a huge Harry Potter fan."*

STAY UPDATED

Social Media

Follow WRIM on Twitter to stay updated with the latest news:

 @WITS_Malaria

Website

The WRIM website is currently under construction.



Watch this space in our next issue for an update.

Competition Time

Get a personalized label for your lab coat!

To enter:

Contact biancaes@nicd.ac.za for instructions (consent forms need to be filled in before entry into the competition). Then, you will be asked to send in as many original, innovative and captivating photos of your research to our judges, Prof. Koekemoer and Prof. Van Zyl. The winner will be chosen based on the best photo(s). Entries are unlimited, so the more photos you send, the more chances you stand of winning! The winner will be announced in the next issue and the winning photo will also make the front cover!

Thank you

Thank you to all those that contributed to the first issue of this e-newsletter. Special thanks go to Prof Basil Brooke, Prof Lizette Koekemoer, Prof Maureen Coetzee, Prof Robyn van Zyl, Prof Theresa Coetzer and Miss Nerissa Bloch for all their contributions. Finally, thank you to you, the reader, for taking the time to read this e-newsletter.

