



## University of Buea

**Location:** Buea, Cameroon

**Scientific Disciplines:** Molecular Biology, Immunology and Epidemiology of tropical diseases, particularly malaria, filariasis, rickettsial infections, tuberculosis and plant-derived medicines. There is expertise in reverse genetics and monoclonal antibodies in the group.

**Description:** The University of Buea is an Anglo-Saxon institution founded in 1993 and is one of six state universities in Cameroon. Buea is a small town delimited on the northwest by the famous Mount Cameroon (4070 m above sea level) and is situated 25 km away from Limbe, a tourist, beach town on the western Atlantic coast. Buea is also about an hour drive from Douala, the economic capital and major sea/air port of Cameroon.

The Biotechnology Unit of the Faculty of Science of the University was founded in 1994 by Professor Vincent Titanji. The objective of the Unit was to promote and undertake Molecular Bioscience activities at the University. So far, the Unit has been equipped with grants obtained mainly from the International Program in the Chemical Sciences (IPICS) an arm of the International Science Program (ISP), Uppsala University, Sweden; The United States Agency for International Development (USAID); The European Union; the Volkswagen Foundation and the International Atomic Agency. But currently, the major funds come from the ISP (IPICS CAM01 Project) which grants approximately 60,000 USD annually. The University also supports the unit occasionally with approximately 4,000 USD per annum. The Unit's research activities are tailored to match the available funds, though capacity is not being exhausted.

Research activities commenced in the Unit in early 1996 in the areas of Molecular, Biochemical and Immuno-parasitology applicable to tropical diseases. Today, the scope is wider and on-going research projects include: vaccine development in onchocerciasis and malaria; molecular diagnosis and epidemiology of onchocerciasis, loiasis, typhoid fever, rickettsia and tuberculosis; rational and systematic drug discovery in onchocerciasis, malaria, typhoid fever and tuberculosis. Tools currently employed include recombinant DNA technology; immunochemistry and hybridoma technology; cell, bacterial and parasite cultures; bioinformatics; as well as ethno-botanical and field surveys.

The current staff and students of the Unit include:

1. Professor Vincent P.K. Titanji (coordinator), Ph.D.; Chattered biologist; Fellow of the Institute of Biology, London; and Fellow of the Cameroon Acad. of Sciences and TWAS: The Academy of Sciences for the Developing World. Expertise in Biochemistry, Molecular Biology, Immunology, Enzymology and medicinal plants . Email: [vpktitanji@yahoo.co.uk](mailto:vpktitanji@yahoo.co.uk)
2. Dr. Theresa Akenji, Ph.D.; Associate professor; expertise in Microbiology and

- Immuno-Parasitology. Email: [wifon@yahoo.com](mailto:wifon@yahoo.com)
3. Dr. Roland Ndip, Ph.D.; Associate professor; Expertise in Microbiology and Medical Bacteriology. Email: [ndip3@yahoo.com](mailto:ndip3@yahoo.com)
  4. Dr. Samuel Wanji, Ph. D., lecturer; Expertise in Parasitology and Biochemistry. Email: [swanji@yahoo.fr](mailto:swanji@yahoo.fr)
  5. Dr. Nelson Ntonifor, Ph.D., lecturer; Expertise in Entomology and Biochemistry. Email: [ntonifor@yahoo.com](mailto:ntonifor@yahoo.com)
  6. Dr. Violet Bumah, Ph.D., Assistant lecturer; Expertise in Biochemistry and Pharmacology. Email: [bumah\\_violet@yahoo.com](mailto:bumah_violet@yahoo.com)
  7. Dr. Stephen Ghogomu, Doc.3 cycle, Assistant lecturer; Expertise in Biochemistry and Molecular Biology. Email: [mbigha@yahoo.co.uk](mailto:mbigha@yahoo.co.uk)
  8. Dr. Lucy Ndip, Ph.D. lecturer; Expertise in Riketsia. Email: [ldip@yahoo.com](mailto:ldip@yahoo.com)
  9. Dr. Fidelis Cho-Ngwa, Ph.D. Assistant Lecturer; Expertise in Epidemiology, Monoclonal antibodies and Bioinformatics. [chongwa\\_ub@yahoo.co.uk](mailto:chongwa_ub@yahoo.co.uk)
  10. Dr. Ngwa Alfred Amambua, Ph.D. Assistant Lecturer; Expertise in Molecular Biology, Bioinformatics, reverse genetics. [alfngwa@yahoo.com](mailto:alfngwa@yahoo.com)
  11. Dr. Jude Bigoga, Ph.D. Research Officer; Expertise in Molecular Entomology and Immunology. Email: [judebigoga@yahoo.com](mailto:judebigoga@yahoo.com)
  12. Mrs. Irene Anyangwe, Ph.D candidate in Microbiology, Assistant lecturer. [ianyangwe@yahoo.com](mailto:ianyangwe@yahoo.com)
  13. Mrs. Namondo Agnes, Ph.D. student in Biochemistry (Enzymology), Assistant lecturer.
  14. Mr. Moses Ngemenya, Ph.D. student in Biochemistry (Medicinal plants, Pharmacology), Assistant lecturer. Email: [mnnngemenya@yahoo.com](mailto:mnnngemenya@yahoo.com)
  15. Mr. Damian Anong, Ph.D. student in Microbiology (Molecular epidemiology and Immunology), Assistant lecturer . Email: [anongdn@yahoo.com](mailto:anongdn@yahoo.com)
  16. Ms. Emily Tangie , M.Sc. student in Biochemistry (Molecular biology and Immunology)
  17. Mr. Metuge Jonathan, M.Sc. student in Biochemistry (Molecular Biology and Immunology)
  18. Mr. Mbua Eric, M.Sc. student in Biochemistry (Enzymology, Protein Purification)
  19. Mr. Songmbe Michael, HND, technologist. Email: [m\\_songbe@yahoo.com](mailto:m_songbe@yahoo.com)
  20. Mr. Kingsley Nchamukong, B.Sc. technologist. Email: [knchamukong@yahoo.com](mailto:knchamukong@yahoo.com)

**Laboratory Facilities:** The unit currently consists of one main and four affiliated research laboratories. One of the affiliated labs is attached to an animal house that is yet to be equipped. The main lab has a total floor space of about 100 square meters and is large enough to accommodate 8-10 researchers at the same time. The affiliated labs can accommodate a similar number.

The unit has an animal facility where it currently breeds mice and rabbits. The current facility can hold 200 mice and 4 rabbits, but there is ample space for any substantial expansion. It has established field research stations for malaria and onchocerciasis. There is no conventional university teaching hospital but the unit is linked to three popular government or mission hospitals in the province where clinical samples can be collected.

The unit has 5 computers in the laboratory, one of which is linked to the Internet. There are plans to have more computers in the unit which are permanently linked-up to the Internet. However, the University has a permanent and modern Internet cafe with over 60 computers all linked up to the web. At this café and even out of the University campus, an hour surfing costs approximately 50 cents USD.

The laboratories are moderately equipped and the current pieces of functional equipment include the following (Quantity, Equipment, Brand or supplier, Year of purchase):

- 1 Refrigerated incubator, Fisher, 1 2004
- 2 Incubator shaker, New Brunswick Scientific, 1997/2004
- 1 Hybridisation incubator, Fisher, 2004
- 1 Autoclave, Fisher, 2004
- 1 Digital dissecting microscope, Motic, 2004
- 1 Magnetic stirrer/hot plate, Fisher, 2004
- 1 pH /conductivity meter, Fisher, 2004
- 1 pH meter Inolab, 2004
- 1 Fluorescence microscope, Leitz, 2004
- 10 Precision micropipettes, Fisher, 1997/2004
- 1 Deep freezer (500 L, ultra low -86 C), Sanyo, 2001
- 1 DU 500 UV-spectrophotometer, Beckman, 2001
- 1 Electrophoresis power supply (EPS301), Amersham Pharmacia Biotech, 2003
- 1 FireBoy plus sterile hood burner, Integra Bioscience, 2001
- 1 Bi-distiller, Labasco, 2004
- 1 Multi-channel pipettor, Eppendorf, 2001
- 1 Slide-projector, Reflecta, 2001
- 1 Domestic refrigerator/freezer, Appolo, 2003
- 1 Camera with set of 3 macrolenses, Minolta, 2001
- 2 Protein electrophoresis units, Biometra/Uppsala Univ, 1987/2003
- 2 Nucleic acid electrophoresis unit, Biometra, 1997/1997
- 1 Gradient mixer, Uppsala Univ, 1987
- 1 Electroblothing system, Biometra, 1997
- 3 Centrifuges, Heraeus, etc, 1997/used before
- 3 Bacteriologic incubators, Heraeus, 1997
- 2 Laminar flow hoods, Holten/ unknown , Used before
- 2 ELISA readers Wellscan 2 1997/2003
- 2 Precision balances, Mettler, 2001
- 1 Inverted microscope, Euromex, 1997
- 1 UV/visible transilluminator, Biometra, 1997
- 1 Cell harvester, Dynatech, 1997
- 1 -20 -40 deep freezer, 1996
- 2 Refrigerators/ -20 freezers, 1996/2003
- 1 Thermocycler for PCR, Eppendorf, 2002
- 1 Cold chamber, Revco, 2002
- 1 18 Mega Ohm water purifier, Solution 2000, 2002
- 1 PIII (800 MHz) PC, Dell, 2001

- 1 HP DeskJet printer, 2001
- 1 Homogeniser, Rudolph Grave AB, 1997
- 1 Peristaltic pump, Ismatec, Used before
- 1 Vortexing machine, Vortex Genie, Used before
- 1 Vacuum pump, Neuberger, Used before
- 1 Digital optic scanner, Epson, 2003
- 1 CO2 incubator, LMS, 1997
- 1 Black/white gel camera, Polaroid, 1997
- 1 ELISPOT Reader, AID, 2005

**Past Collaborations:** With scientists of Georgetown University, New England Biolabs, and the University of Texas Medical Center. The following papers were also published jointly.

1. Ndip LM, Bouyer DH, Travassos Da Rosa AP, Titanji VP, Tesh RB, Walker DH. Acute spotted fever rickettsiosis among febrile patients, Cameroon. *Emerg Infect Dis.* 2004 Mar;10(3):432-7. PMID: 15109409 [PubMed - indexed for MEDLINE]
2. Quakyi IA, Leke RG, Bigoga J, Bomba-Nkolo C, Titanji V, Walker-Abbey A, Hickey MA, Johnson AH, Taylor DW, Ndountse L. et al. The epidemiology of Plasmodium falciparum malaria in two Cameroonian villages: Simbok and Etoa. *Am J Trop Med Hyg.* 2000 Nov-Dec;63(5-6):222-30. PMID: 11421368 [PubMed - indexed for MEDLINE]
3. Walker-Abbey A, Djokam RR, Eno A, Leke RF, Titanji VP, Fogako J, Sama G, Thuita LH, Beardslee E, Snounou G, Zhou A, Taylor DW. Malaria in pregnant Cameroonian women: the effect of age and gravidity on submicroscopic and mixed-species infections and multiple parasite genotypes. *Am J Trop Med Hyg.* 2005 Mar; 72 (3): 229-35. PMID: 15772312 [PubMed - indexed for MEDLINE]

**Affiliations:** The unit is currently affiliated with laboratories in two of the other state universities in the country. These labs enable the unit to share expertise and enjoy comparative costs advantages. At the University of Dschang, extracts of medicinal plants are prepared, fractionated and pure products isolated. At the University of Yaounde I, the unit shares expertise in the field of gene technology with Associate Professor Dr. Wilfred Mbacham, a Harvard University graduate, and in the field of immunobiology with Dr. Rose Leke, an expert in malaria and pregnancy.

As indicated above, the unit is also affiliated to some government and mission hospitals. The unit also collaborates with a number of universities abroad. Notable examples include the Universities of Uppsala Biomedical Center and University of Lund in Sweden, University of Berlin in Germany, Georgetown University in the USA, and the University of Nottingham in the UK. The unit shares expertise and materials with these laboratories.

**Placement Description:** The GSC fellow would benefit from the expertise and facilities described above. S/he would benefit from access to unique resources like: tropical plants and animals, including the medicinal plants and other natural products (Cameroon has

been aptly described as Africa in miniature because of its very rich flora and fauna); research on tropical diseases; availability of field expertise, patients and specimens.

**Desired Applicants:** Fellows at all levels (post docs through senior scientists) encouraged to apply. One year placement.

**Other:** A GSC fellow may give seminars in his/her field of expertise, especially at the post-graduate level.