UNIVERSITY OF ILORIN

THE ONE HUNDRED AND TWENTY-SEVENTH
(127th) INAUGURAL LECTURE

"THE INVISIBLE BEHIND AND BEYOND THE VISIBLE"

BY

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This 127th Inaugural Lecture was delivered under the Chairmanship of:

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My lords spiritual and temporal,
Distinguished students of Biochemistry,
Gentlemen of the Print and Electronic Media,
Distinguished invited guests,
Great Unilorites, Ladies and Gentlemen

Preamble

It is with a heart of thankfulness to God who has not only led, but also kept me to this day to deliver the 127thinaugural lecture of the University of Ilorin, our unique and better by far university. It is indeed a great honour to have the privilege of today's lecture from the Faculty of Science and particularly from my Department.

Following a very worthy tradition of most inaugural lecturers of this our great institution, The University of Ilorin, permit me to trace the history of inaugural Lecturers from the Department of Biochemistry since its inception in 1977. Professor Adewale Agboola Odutuga the first Professor of the Department was also the first to deliver an inaugural lecture (the

20th) with the title "***The Essential lipids: Life's Springboard"*** on the12th December 1985. The second (61st) was delivered by Prof Musbau Adewumi Akanji and it was titled "***Eat and Die by Little"*** on the 24th October 2002. The lecture titled "***All for the Love of Nutrients"*** (78th) was delivered by Prof. Oyelola Bukoye Oloyede on 26th May 2005 while on the 22nd March 2012, Prof Adenike Temidayo Oladiji delivered the 102nd lecture titled "***The Little Giants in Food"***. Prof. Clement O. Bewaji, while still in the Faculty of Basic Medicine delivered the 64th on 27th February 2003.The lecture was titled "***The Sickle Cell Membrane: Tip of the Iceberg***". All these lectures, in one way or the other delved into, and addressed issues of food, nutrition, toxicants and health.

Today I have the honour and privilege to deliver this 127th inaugural lecture of the University of Ilorin, being the 33rd from the Faculty of Science and the 5th from the Department of Biochemistry and coming about nine years after my appointment to the chair, with the title: "***The Invisible Behind and Beyond the Visible"***.

Introduction

Let me start with a beginning of sort: my journey to this point in life which has been catalysed by many gracious individuals started from the time of my birth to the Late Mr. Lawrence Shemaiya Sakpere and Mrs. Mary Gubroma Sakpere of Ekresia Compound of Orhuwhorun in Udu Local Government Area of Delta State. The nature of my father's job as a policeman involved being transferred from one town to another across the country, thus the whole family had to move with him to the next station every time. He was transferred often, and sometimes far from his state of origin hence he desired that I be close to my roots. When the opportunity arose for secondary education, my father decided that I attend secondary school back home in the then Bendel State instead of in Lagos where we resided at the time and where I had also gained admission to one of the secondary schools; so off to Federal Government College, Warri

I went.There the renowned teacher and administrator Mr. P. H. Davis was my Principal in the seven years I spent for the O'level and A' level studies.

Upon completion of my A'levels, for personal reasons I opted for Biochemistry rather than Physiotherapy which was the course I was initially offered in the University of Ibadan, in 1976. Thus, thirty-seven years ago, I became a proud undergraduate student at the Department of Biochemistry, where the man regarded as the Father of Biochemistry in Nigeria and possibly in Africa as a whole, Professor Olumbe Bassir, was the Head of Department. In my three years sojourn as an undergraduate, Professor Olumbe Bassir was my Head of Department. During my final year I had the good fortune of carrying out my final year projects firstly with the late Professor I.B. Umoh in the area of Food and Nutrition, and then with Professor Olufunsho O. Olorunsogo in the area of Membrane Biochemistry. These erudite academics introduced me to the essentials of experimentation and research and my interest in the area of membranes was stimulated.

After my National Youth Service Scheme at Minna, in Niger State, I decided to enroll for the M.Sc. programme and in a discussion with my father, he hoped that after completing my Master's degree I would have to seek employment because of the family situation and work for a year or two before undertaking the Ph.D. programme so that I would be in his words "the first female Ph.D. holder in our town Orhuwhorun and possibly in our Udu clan or LGA". Alas! barely four months into my M.Sc. Programme, my loving father died in January 1981. I thank God however that his wish and desire concerning me was fulfilled even beyond his dream as I stand today, to deliver this lecture and he is now a typical catalyst: an ***Invisible Behind and Beyond the Visible*** may we say***?***

Mr. Vice-Chancellor Sir, I returned to the Department of Biochemistry at the University of Ibadan in October 1980 to commence my M.Sc. Degree programme in the Biomembrane Research Laboratories under Prof. O.O. Olorunsogo. Among my

colleagues in the Membrane Research Laboratories was Mr. Clement O. Bewaji, now Professor and current Dean, Postgraduate School. On successful completion of the M.Sc., I proceeded to the Ph.D. programme. It was during this period that Prof. Adewale A. Odutuga came as external examiner to the Department and saw me at work in the Biomembranes Research Laboratory; he was impressed with my work and there and then suggested that I apply to his Department of Biochemistry at the University of Ilorin as a lecturer. He was a catalyst for my move to the University of Ilorin on November 26, 1984 and the continuation of my journey to this august day and event.

My View of Biochemistry

To define Biochemistry concisely is difficult and it has been pronounced an impossible task to pigeon-hole the discipline. A consideration of its historical development from the 18^{th} century till date shows that Biochemistry has grown and metamorphosed into a discipline that impacts on several other subjects such as Plant Biology, Agriculture, Medicine, Molecular Biology, Biotechnology and Bioinformatics, Cell Biology, Genetics, Energy and Metabolism, etc. Biochemistry is so widely applicable because it is the application of the Principles of Physics and Chemistry to the systematic study and explication of Biological systems. So Biochemistry, though sometimes regarded as an offshoot of Biology and Chemistry is of course not a mere mixture of both. I therefore agree with Prof. O.B. Oloyede who in his inaugural lecture expressed the opinion that Biochemistry has grown far more and beyond the scope of its parents Biology and Chemistry but I also dare to say that it is not only a marriage of Biology and Chemistry but it has outgrown the three progenitors. This is good development as it should be since the hope, wishes and prayers of parents are that the children will be greater and better than them.

Development in Biochemistry has been very versatile and successful in explaining living processes such that it can be said that Biochemistry is at the heart of life sciences. This has

made engagement in biochemical research so attractive over the last 40 years such that virtually all areas of the life sciences from botany to medicine are engaged in biochemical research. In fact Lubert Stryer stated concerning Biochemistry that "…..rapidly progressing from a science performed almost entirely at the laboratory bench to one that may be explored through computers. Its practical approach applies the molecular aspects of chemistry to the vast variety of biological systems." (http://www.biochemistry.org). This invariably is true with recent development in the areas of bioinformatics, proteomics and genomics. Rapid advances in techniques for biochemistry research have made the discipline desirable for virtually everyone in the life sciences.

Anselm Payen, the man who discovered the first enzyme- amylase formerly called diastase in 1833, is credited with the dawn or the beginning of biochemistry. However it was the German Chemist Carl Neuberg that coined the name biochemistry in 1903. Biochemistry was referred to as physiological chemistry or biological chemistry prior to this time.

It is well known that each part of every living being is biochemically connected. Every part of the human body for instance maintains communication with each other via its various tissues and fluids at various levels and this ensures regular restoration and maintenance of proper balance and harmony, making the body a healthy functional unit that expresses proper physiological and mental activities.

Living organisms are derived from the same elements carbon, hydrogen, nitrogen, oxygen, etc. that are found in lifeless matter. No wonder then that the usual laws of physics and chemistry that are at work in the more elementary aspects of the cosmos are also found to be operational within the biological entities that constitute living organisms since they are part of the material universe. The cell (Figure 1), with which tissues and organs are built among other things is indeed extremely complex. As miniscule as it is, being only identifiable under a

microscope, it can be described as a world of its own, brimming with billions upon billions of atoms and molecules in thousands upon thousands of organized forms and reactions. Yet, in spite of its mind boggling and dynamics, the cell is very precisely organized in its structure and functions, and we can briefly point out that:

- ✓ it is enclosed by the ***membranous boundary*** which polices entry and exit more efficiently than most customs and excise outfits at national borders;
- ✓ it also contains very efficient power-generating factories such as the ***chloroplasts and mitochondria*** which in output cannot be comparable to our PHCN;
- ✓ the cell is also replete with various industries: ***ribosomes and golgi bodies*** that manufacture and package vital life-supporting biomolecules like the proteins, lipids and nucleic acids from raw materials imported from the external environment;
- ✓ there are also industrial plants such as the ***smooth endoplasmic reticulum***, that process and recycle 'wastes', and also handles external and internal pollution;
- ✓ the cell also has transportation mechanisms - in the ***membranes*** that ensures prompt delivery and removal of chemicals from one point to another;
- ✓ it has departments of defence such as the ***lysosomes***, and the **immune system** which contain several armories standing guard against invasion and controlling immigration, imports and exports;
- ✓ all these have a central seat of government - ***the nucleus*** with its genetic apparatus that control the production of various cellular materials and also ensures continuity; and
- ✓ each of these vital entities cannot be separated from the medium – ***cytoplasm*** that supports them and contains necessary mineral elements for their survival or else they cease to exist.

Mr. Vice-Chancellor Sir, none of these components of the cell can remain on its own without continuing communal interaction with the others. In addition, all the processes occurring in them are closely and strictly regulated by inherent mechanisms that not only ensure continuity and coordination but also maximize the use of cellular assets and thus prevent economic wastage.