

I am deeply thankful ^{to} ~~for~~ the Thathachari
foundation for asking me to do this most pleasant
duty...for one Thathachari is ^a ~~one~~ name I
remember as one of our famous seniors from my
days as ^a graduate student in the GNR laboratory
[^]
in early seventies. Also my association with
Balaram goes for over forty years ...almost all of
these ~~se~~ years of our scientific careers (We of
course are as different as you can get). I have
known Balaram for nearly all his years of doing
Science...from when I met a shy young man of 24
or 25 at the Molecular Biophysics Unit where he
had just joined as the youngest of faculties

~~ever~~ and I was trying to sort out a PhD for myself. We started a collaboration which continues to this day, and I had a ring side view of his Science and the way he pursued this with single minded devotion. Truly....in all his science his was the only mindothers contributed in many other ways!

In 1970 he was a student in Carnegie Mellon when he discovered quite accidentally Internuclear Double Resonance(INDOR) which later became a grand tool to understand both protein-protein and protein-small molecule interaction. Using this idea where irradiating an

atom caused changes in intensity of atoms in the neighborhood even when they are not covalently linked.....he studied in great detail the binding of Oxytocin and Vasopressin to

Neurophysin.....Oxytocin at that time a diuretic hormone now has become an important

neuromodulator ..modulating behaviors related to

intimacy and pair bonding so much so it is called

and also lying & cheating.

the love hormone....that aside the most significant

aspect of his early research was that it laid a

foundation for many studies on small molecule

and protein interactions which became a major

theme in his research later. He completed his

PhD in ^aremarkably short time and moved to the lab of Bob Woodward and was associated with the famous Vitamin B 12 synthesis project for a

^{life} year ~~and~~ soon started his own lab in Bangalore.

— today his work 2 100 people 12 years w. small test tubes. Nerves. 1974

With a princely grant of no more than a few

thousand and with other responsibilities like

teaching.....which of course he was happy doing I recall.

Those were tough days but the frugality and self help methods that evolved from those days

continue ...from NMR of peptides, in a couple of years he moved over to biophysical studies of biomembranes, rather a new area the world

his Journal

over...the first issue of biomembranes" started a

year after and Cell followed suit a further year

after...and extensive use of fluorescence and NMR

spectroscopy.... and soon became a focal point

for several biochemists and biophysicists who

sought his collaboration.

As a natural corollary to starting with

biomembranes he started work on ionophores to

effectively input his considerable skills and

intuition in chemistry to the problem of ion

transport across membranes...ionophores were

natural ion channel mimetics

LIPID BILAYER

no hood needed but in

ionophores - quite close
to Biomembrane

in IBS
selected
Lala 11th
Bdgn Rm B 11th

^{peptide pore forming molecule}
Alaethicin, suzukacilin and others with Nagaraj
^a mainly synthesising variety of ^{modified} peptides containing
unusual aminoacids like Alpha Amino Isobutyric
acid. Ion channels in those years were only a
hypothesis and ionophores were sought as
models for channel function.

^{must}
I ~~can~~ say this started a flood of publications and
recognition the world over..his name got
intimately linked with peptide chemistry. But ~~in~~
his own very great ^I interest ^e was unusual
conformations these constrained peptides took
DURE ELEGANT STRUCTURES
And these were extensively investigated by NMR,

Flourescence and X ray crstaloography as well as
by what is popular in the GNR

culture..conformational calculations. This

^{Propelled}
naturally now ~~turned~~ him in to using both

chemical and molecular biological approaches to
protein design and stability...folding and function

A long time collaboration with Hema^{prnt} on proteins^{Belauer}

of the malarial parasite with a view to designing
specific drugs must be mentioned here.

His undying interest in medicine and application
of basic sciences to medical questions found an
admirer in Dr. PR Krishnaswami...with whom he
initiated studies on blood proteins of thalassemia

AND ISABELLA
KARLE

long
collaboration
now continuing

CONFIRMATION
X-RAY
CONFIRMATION

family followed by mass spectroscopy... A most remarkable achievement was an ability to predict genetic susceptibility to children from analysing parental blood. And several other ^{projects} ~~things~~ like his work on GABA-pentin ...AIDS detection kit...most people do not know he was crucial to make that ^{were relevant to human health} possible. It was hence most fitting when last month the Kolar University (bestowed on him an MD honoris causa).

The same ionophore interest too ^k him to start a serious search for bioactive peptides ^{from} ~~for~~ fungi. And this is when he discovered the usefulness of Mass spectrometry in both analytical and

structural studies of peptides. In ^a short time and that while he was also director he learnt and taught us all the value of this novel technology that today there is no big lab or Biotech Company in India that does not have either a Balaram student or post doc heading a Mass Spec lab.

It was about this time

After a hiatus of nearly thirty years doing behavior biology I came back to work again with Balaram on Conus peptides, frog and wasp etc ^{PAIN KILLERS} anti biotics.....Chidambaram story... conus peptides and sequences.....pain killers..New generation sequencing and that leads to Chemical Ecology that has recently become his major

obsession. Chemical Ecology...and what way it

is going to transform . There is not an
occasion we miss talks about ANTS &
BCEES, Butterflies.
Remarkably all of Balaram's science except for

~~the~~ his graduate studies was done in Bangalore

at the Molecular Biophysics Unit of the IISc

founded by GNR with several students and post

docs ~~synthesis~~. Collaborators sought him rather

than he going out and finding them..... even

recently Toto Olivera found that the only person

in the globe who can with felicity identify and

sequence pyroglutamate containing peptides was

Balaram.

Personally ^{my esteem of institutions but} (I have felt that most honors) honored

^{ref up}
themselves in finding Balaram for bestowing
^{and so I trust a happy}
their award and I am confident that Thathachari
foundation will also be truly recognized for
deciding to honor him.