

# Institute for Intrinsic Gravitation Biology (i3GB)



## The i3GB Foundation

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Ref: i3GB/prog/Week/9

Dtd.16th January, 2016

**Dear Ro Kampman,**

Thanks for your invitation/ sensitization to observe Global Biophysics Week with Self Gravitation Bio, nomenclature and scope of which came through you/ Biophysical Society.

We are happy to announce that the Institute for Intrinsic Gravitation Biology (i3GB) will be participating the first ever Global Biophysical Week through events on:

1. **Free distribution of e-book** titled “Self gravity – The major investigation gap in life sciences” through its website [www.selfgravitationbio.com](http://www.selfgravitationbio.com) from 7<sup>th</sup> to 11<sup>th</sup> March, 2016; apart from,
2. **Local interactive seminars** at Research Institutes/ laboratories and Universities undergoing investigation on macromolecular, cellular and multi-cellular level of Life sciences (program is being chalked out in consultation with the host institutes); and,
3. **Arranging international virtual conference with experts** on the theme titled “Self gravitation bio: Some convincing evidences on astrophysical principles.”

With regards

Yours sincerely,

**Dr. Iresh Ranjan Bhattacharjee**  
**Principal Scientist & Founder**

**Biophysics Week**  
March 7-11, 2016

**Self gravitation bio**  
Accumulation of mass at macromolecular, cellular, multicellular level onwards

**New path-breaking topic**  
On astrophysical principles  
'Self and mutual gravity'

'planet within planet'  
Seclusion through buoyant force of extra-ordinary quantity of fluids

**i3GB** **i3GB**

**Institute for Intrinsic Gravitation Biology (i3GB)**  
**www.selfgravitationbio.com.** **Email: selfgravitationbio@gmail.com**

Let the First Global Biophysics Week from March 7-11, 2016 be:

**"Ring in the New Biophysics topic**

## **'SELF GRAVITATION BIO',**

*that primarily based on astrophysical principles at macromolecular, cellular and multi-cellular level onward with accumulation of mass,*

*For functioning of 'self gravity' and 'mutual gravity'*

*As if 'planet within planet' situation, on maintaining self gravity's free fall condition via seclusion from stronger extrinsic planetary gravity through buoyant force of extra-ordinary quantity of fluids, &*

**Ring out** *'all outdated concepts' in Life sciences*

*for real breakthrough in space and terrestrial life sciences to explore options, manage solutions and optimize results for better management of health and well being of the living bodies .....*

**Institute for Intrinsic Gravitation Biology (i3GB)**

\*ebook for free distribution during the week 7-11 March,2016:

“Self gravity-The major investigation gap in life science” of Iresh Ranjan Bhattacharjee

Through [www.selfgravitationbio.com](http://www.selfgravitationbio.com).

# Institute for Intrinsic Gravitation Biology (i3GB)



**The i3GB Foundation**

**On the occasion of the first Biophysics Week from March 7-11, 2016**

**Self Gravitation Bio – The new biophysics topic for the enquiring mind**

**Self gravitation bio: Some convincing evidences on astrophysical principles**

## **Abstract**

Some convincing evidences are presented with 'Self Gravitation Bio'<sup>1</sup> (nomenclature given by Biophysical Society in 2008) on astrophysical principles for 'self gravity' and 'mutual gravity', as if 'planet within planet' situation for macromolecules within biological cell. In living organisms, buoyant force of fluids (liquid or gas and other mechanisms) helps to maintain needed seclusion from stronger extrinsic gravity comparable to own gravity of Moon on seclusion from Earth in universal field of gravitation. Similar to matter became layered according to density with heavier matter near core and lighter matter near crust during earth's formation, potential energy of self gravity compresses macromolecules like nucleic acid having highest 'molar mass and density' in core position. Mechanical load bearing microtubule-dependent centration of centrosome find geometrical center of cell region. Central equilibrium position of floating macromolecules get subsequently destabilized due to opposing force of inertia and with increase in hydrostatic pressure of compressed fluids. Metabolic energy of biomass works outward as kinetic energy against potential energy of self gravity and planetary gravity. Energy producing organelles chloroplast, mitochondria are away from central position in cell to avoid central load. In living body, anabolism (build-up) and catabolism (break-down) through various process including photosynthesis and respiration respectively result in a constant 'change of masses' per unit volume that can upshot contraction and relaxation alternately on astrophysical principles. Logarithmic spiral phenomena develop in various living creatures like snail, snake and others have the unique geometrical property of maintaining constant angle between radius from centre and tangent from curvature at any point of the arc. Magnitude of potential energy of self gravity goes on decreasing from core to periphery whereas higher magnitude of outward kinetic energy make radius of curvature lengthened.

1. Bhattacharjee I.R. (2013) Self Gravity: The Major Investigation Gap in Life Science. Lambert Academic Publishing ISBN 978-3-659-42698-8.

# Understanding space life through principles of 'Self Gravitation Bio'

Dr. Iresh Ranjan Bhattacharjee<sup>#</sup>

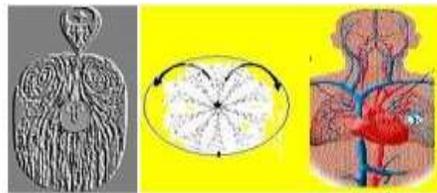
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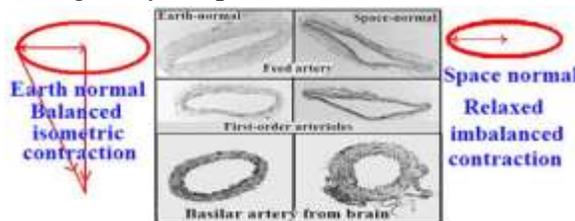
Principles of 'Self Gravitation Bio' (nomenclature given by Biophysical Society USA in 2008) are outlined<sup>1</sup> on astrophysical principles for 'self gravity' and 'mutual gravity'. Up thrust of fluids (buoyancy) in bio-matters maintains separation for 'mutual gravity'. While on earth, fluids are normally pulled down towards human feet. After 'catapult effect' upon entry into microgravity, inertial gravitational anchor gets withdrawn i.e. normal and hypotenuse vectors of the center of self gravity of secluded bio-matters gets pull out from inertial anchor and inverted in orthographic projection. Head ward shift of body fluids occurs.



The net work of blood vessels within the bounds of self-gravity operates in 'convection like flow' from heart (pump).



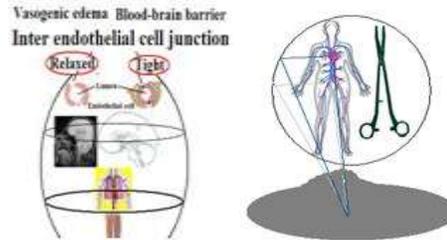
When balanced and isometric contraction in the catheti vector to the center of self gravity, as available under earth-normal condition, get 'relaxed' from 'stretched' condition on entry into space, it result imbalanced contraction in blood vessels. This is reflected from the cross section of the blood vessel of rat<sup>2</sup> under earth-normal and space-normal where feed artery, first-order arterioles and basilar artery from brain are shown to be relaxed under influence of intrinsic gravity in space-normal condition.



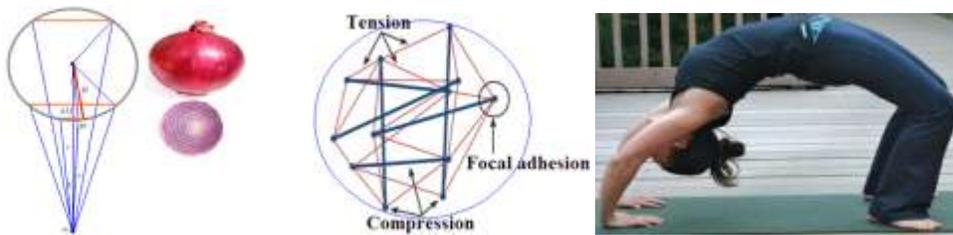
Isostatic balance is the seesaw balance between heavier and lighter mass around center e.g. human head is proportionately larger in infant. There is continued growth of leg during rest period. In plants, roots are comparatively denser than shoot on equal volume basis. Therefore root growth dominates the early growth of the plant followed by shoot growth. In space, under the influence of such 'isostatic balance' redistribution and adaptation process sets in space-normal condition.



Diagonally opposite parity in physical mechanisms is a feature of self gravitating body. ‘Tight’ and ‘relaxed’ condition of inter endothelial cell junction, for example, in the upper part in the brain control blood-brain barrier and vasogenic edema during acute mountain sickness. This is an example of interaction of mutual gravity between earth and self gravity (not commonly believed altitude as factor). Tight and relaxation in the blood flow passage at the farthest points within the bounds of potential energy of self gravity might be triggered by the external gravitational attraction, similar to action of lever over fulcrum at the farthest points, as in Kelly forceps.



As per Newton’s Shell theorem, if distribution of mass in self gravitating body is very symmetric, it can be made of layers, like an onion, with each layer having constant density throughout. A uniform spherical shell of matter attracts a particle that is outside of the shell as if all the shell’s mass were concentrated at its center. Human head is comparatively heavier than its other regions on regional volume basis. In absence of earth’s gravity, centre of attraction momentarily gets changed. Calcium mediated disorder phenomena, then gets prominence. Osteopathic manipulative treatment basically through mechanotransduction (converting mechanical information into biochemical changes), the architectural principles of biotensegrity may be suitably adopted. From various observations of Donald Ingber<sup>3</sup>, it seems that the junction of tension elements with a compression-resistant element can be viewed as a prestressed tensegrity model of a focal adhesion (FA) complex within the cell/ body, considering focal adhesion being in the central to the three dimensional transegrity model. He however pointed out that holding an advanced back-bend yoga pose such as “The Wheel” (Chakrasana- arched body resembles the rim of a wheel), the spinal column does not function mechanically as a “column”.



Hence it is probable that physiological crisis encountered during prolonged space flight under microgravity e.g. calf muscle atrophy, rapid loss of bone mass and its remedial measures can be explored with the concept of self gravitation bio, especially with the advantage of self gravity-friendly Yoga routine exercises like foetus posture in correcting various imbalances during space journey.

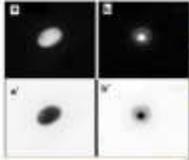


1. Bhattacharjee I.R. (2013) Self Gravity: The Major Investigation Gap in Life Science. Lambert Academic Publishing ISBN 978-3-659-42698-8. ([http://www.webmedcentral.com/article\\_view/4279](http://www.webmedcentral.com/article_view/4279) & [http://www.webmedcentral.com/article\\_view/4296](http://www.webmedcentral.com/article_view/4296) )
2. [http://www.nasa.gov/vision/earth/livingthings/arterial\\_remodel.html](http://www.nasa.gov/vision/earth/livingthings/arterial_remodel.html)

### Self Gravitation Bio: Concept in brief

Without ‘mass’ living organism cannot be imagined. Gravity is the building block of the universe that acts on ‘mass’ on all time basis. Self gravity in biological mass works (mostly in non-Newtonian state) under secluded condition, especially under buoyed up force of fluids. In the particle hierarchy (sub-atom, atom, molecule, compound, organelles, cells, tissue, organ, organ system, and organism), actions of self gravity get prominence with accumulation of bio-‘mass’ from the level of organelles or cell. Self-Gravity is the force that attempts to compress an object to a point at body’s center of gravity, apart from its interaction with external world as ‘mutual gravity’. Domain of basic forces like nuclear or electromagnet are generally charge based, hence time bound. These cannot be a substitute for invisible gravitational binding action of all time. Free fall acceleration due to self gravity (g-value of biomass) that generates independently in such secluded biomass to the tune of ‘nanometer’ per second square to pico or femto level over small distance is quite a significant force for biological micro world and cannot be discarded as insignificant comparing g-value of earth, moon being in ‘meter’ per second square. Effectiveness of miniature gravity and its interaction with larger gravitating body from the view of classical, quantum or non-Newtonian state stands as logical existence including mimics in biological micro world with astronomical macro world in various common phenomena.

**Operation of Self Gravity in living cell**



**Neucleus (a) and Neucleolus (b)**  
can be designated as the ‘core’  
segment of the self gravitating  
interior of the living cell.  
(Image after Jeremy Simpson  
& Rainer Pepperkok)



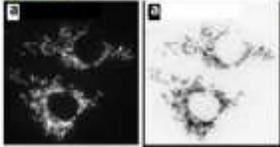
**Logarithmic Spiral**  
Potential energy of self gravity  
Kinetic energy of metabolism

**In Self Gravitating System-  
Central position experiences maximum impact**

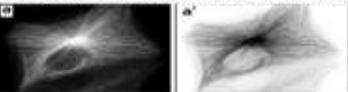
**Energy producing organelles away from core**



**Mitochondria - Energy producing Organelles against Self Gravity are little away from central position in living cell**  
(Image after Jeremy Simpson & Rainer Pepperkok)



**Centrosome Centration - Example of operation of Self Gravity in living cell**



**Centralized arrangement of microtubules:  
Binding potential energy of self gravity towards Centrosomes and kinetic energy against binding energy by Microtubules in living cell**  
(Image after Jeremy Simpson & Rainer Pepperkok)

**Mechanical living cell deformation studies have demonstrated that mechanical loads are borne by microtubules, which are balanced by tensile forces in contractile elements of the cytoskeleton.**

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**Microtubules in an embryonic cell of *C. elegans* - Astral microtubules from the spindle reach the cell cortex - demonstrates inter-gravitational attraction between adjacent self gravitating bodies (Image after Wallace et al. 2012)**

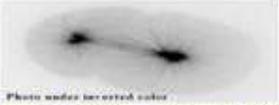
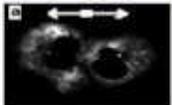
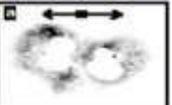


Photo under inverted color





(Image after Jeremy Simpson & Rainer Pepperkok)

**Centrosomes migrate to opposite poles of the cell during mitosis- due to outward hydrostatic/ turgor pressure.**