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**Le plus important est-il de savoir ou de comprendre ?**

# Virus

## ONDE OU PARTICULE

## QUEL IMPACT SUR NOTRE SANTÉ ?

THÉORIE INNOVANTE  
À LA UNE

## La nature des virus : onde ou particule ?

En permanence porteurs sains de plusieurs virus, pourquoi ne sommes-nous pas constamment malades ? Une approche inédite de la virologie explore le fonctionnement complexe d'une infection virale, et concilie la médecine pasteurienne et l'efficacité de certaines médecines complémentaires.

**COVID-19 & MÉDIAS**  
INTERVIEW D'UNE INFIRMIÈRE  
CENSURÉE PAR BFM TV

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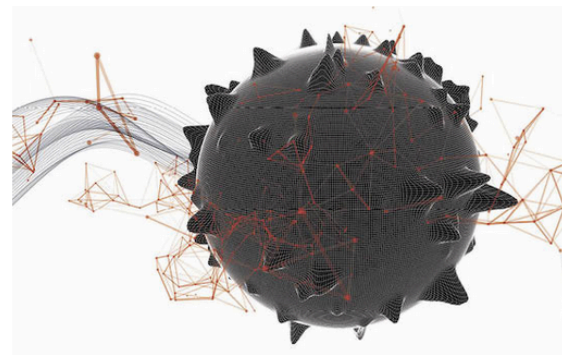


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**ET AUSSI :**

MODERNA ET ÉVASION FISCALE • COVID-19: NOTRE ENQUÊTE SUR LES AUTOTESTS • LITTÉRATURE: DE L'ARCHIPEL DU GOULAG À L'ARCHIPEL DU RENONCEMENT • LE MONDE SELON PHILIPPE GUILLEMAN • ANTENNES-RELAIS ET RÉSISTANCE CITOYENNE • DÉSOBÉISSANCE FERTILE (ÉPISODE 5) • L'ÉTRANGE PYRAMIDE RHOMBOÏDALE. SEUR DE KHÉOPS ?

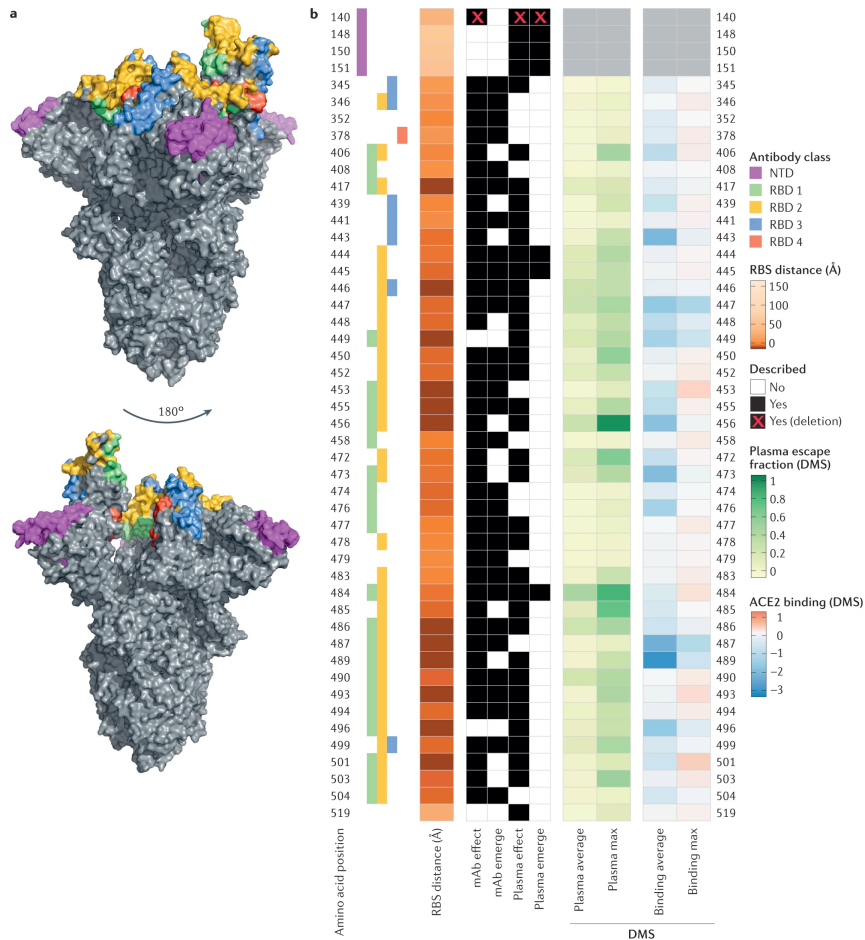
n°137 / novembre-décembre 2021



<https://magazine.nexus.fr/n137/>

# SARS-CoV-2 variants, spike mutations and immune escape

<https://www.nature.com/articles/s41579-021-00573-0>



<https://www.nature.com/articles/s41579-021-00573-0/figures/1>

# Immunohealth for the Poor

The New York Times

The Coronavirus Outbreak >

LIVE

Latest Updates

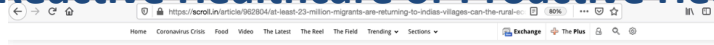
Maps and Cases

Vaccine Tracker

Russia Approves Vaccine

Markets & Economy

## Reactive Healthcare or Proactive Health?



At least 23 million migrants are returning to India's villages. Can the rural economy keep up?

The country's villages are already grappling with hidden unemployment.



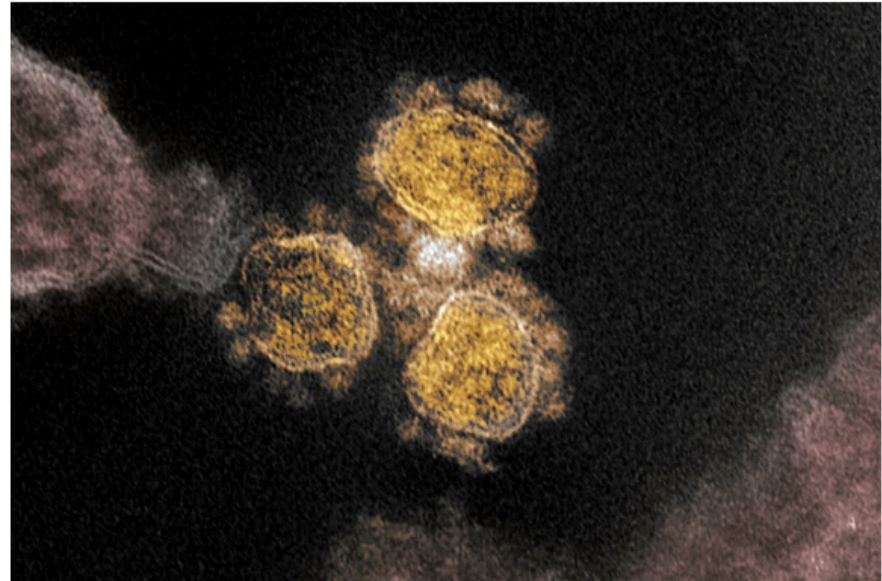
Be 'vocal' about 'local',



Aug. 4, 2020

## Scientists Uncover Biological Signatures of the Worst Covid-19 Cases

Studies of patients with severe cases of Covid-19 show the immune system lacks its usual coordinated response.



A colorized transmission electron microscope image of coronavirus. NIAID



CORONAVIRUS CRISIS

# At least 23 million migrants are returning to India's villages. Can the rural economy keep up?

Be 'vocal' about 'local',

The country's villages are already grappling with hidden unemployment.





# Derisking The Individual Health Upwards

The Environment: We are part of the environment and the environment is us

Madhya Pradesh: Key Statistics	
Population (Census 2011)	72,627 (In Thousand)
Male	37,612 (In Thousand)
Female	35,015 (In Thousand)
Scheduled Tribes (Census 2011)	15,136 (In Thousand)
Scheduled Castes (Census 2011)	11,317 (In Thousand)
Area (in sq. kms.)	308,000
Districts	51
Tehsils	367
Development Blocks	313
Total villages	54,903
Populated villages	52,557
Gram Panchayats	22,824
Literacy	42,851 (In Thousand)
Male	25,174 (In Thousand)
Female	17,677 (In Thousand)

# The Signs and Science of Wellness:

*Lessons from India's Ancient Systems of Health and Wellness Informing Integrative Medicine, Future Global Healthcare Systems, Medical Education and Research*

MEDICINE ... WAS NOW TO PROVE  
HER LINEAGE AS THE MOTHER OF  
NATURAL SCIENCE AND THE TRUTH  
OF THE SAYING OF HIPPOCRATES  
THAT

TO KNOW THE NATURE OF MAN  
ONE MUST KNOW THE NATURE OF  
ALL THINGS

**CLIFFORD ALLBUTT**

**Sir Thomas Clifford Allbutt**  
(20 July 1836 – 22 February 1925)

**18<sup>TH</sup> Regius Professor of Physic**  
1892 TO 1925



**Sir Keith Peters (1987 to 2005)**



# Denis Noble – 10 rules of complex systems

## Principles of Systems Biology

Denis Noble at a meeting on Systems Biology at Chicheley Hall, August 2013

Noble has proposed Ten Principles of Systems Biology:

**Biological functionality is multi-level**

Transmission of information is not one way

DNA is not the sole transmitter of inheritance

The theory of biological relativity: there is no privileged level of causality

Gene ontology will fail without higher-level insight

There is no genetic program

There are no programs at any other level

There are no programs in the brain

The self is not an object

**There are many more to be discovered; a genuine 'theory of biology' does not yet exist**



**Denis Noble CBE  
FRS FMedSci MAE  
(b 1936)**

Burdon Sanderson Chair of  
Cardiovascular Physiology at  
the University of Oxford  
from 1984 to 2004

[https://en.wikipedia.org/wiki/Denis\\_Noble](https://en.wikipedia.org/wiki/Denis_Noble)

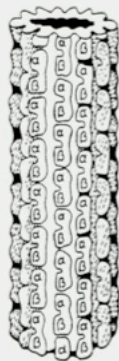


## Biophysical Aspects of Coherence and Biological Order

Jiri Pokorny,  
Tsu-Ming Wu



Springer



nature  
medicine

REVIEW ARTICLE

<https://doi.org/10.1038/s41591-020-0968-3>

Check for updates

## Extrapulmonary manifestations of COVID-19

Aakriti Gupta<sup>1,2,3,20</sup>, Mahesh V. Madhavan<sup>1,2,20</sup>, Kartik Sehgal<sup>4,5,6,20</sup>, Nandini Nair<sup>7</sup>,  
Shiwani Mahajan<sup>3,8</sup>, Tejasav S. Sehrawat<sup>9</sup>, Behnood Bikdeli<sup>1,2,3</sup>, Neha Ahluwalia<sup>10</sup>, John C. Ausiello<sup>7</sup>,  
Elaine Y. Wan<sup>1</sup>, Daniel E. Freedberg<sup>11</sup>, Ajay J. Kirtane<sup>2</sup>, Sahil A. Parikh<sup>1,2</sup>, Mathew S. Maurer<sup>1</sup>,  
Anna S. Nordvig<sup>12</sup>, Domenico Accili<sup>7</sup>, Joan M. Bathon<sup>13</sup>, Sumit Mohan<sup>14,15</sup>, Kenneth A. Bauer<sup>4,6</sup>,  
Martin B. Leon<sup>1,2</sup>, Harlan M. Krumholz<sup>3,8,16</sup>, Nir Uriel<sup>1</sup>, Mandeep R. Mehra<sup>17</sup>, Mitchell S. V. Elkind<sup>12,15</sup>,  
Gregg W. Stone<sup>2,18</sup>, Allan Schwartz<sup>1</sup>, David D. Ho<sup>19</sup>, John P. Bilezikian<sup>7</sup> and Donald W. Landry<sup>14</sup>✉

Although COVID-19 is most well known for causing substantial respiratory pathology, it can also result in several extrapulmonary manifestations. These conditions include thrombotic complications, myocardial dysfunction and arrhythmia, acute coronary syndromes, acute kidney injury, gastrointestinal symptoms, hepatocellular injury, hyperglycemia and ketosis, neurologic illnesses, ocular symptoms, and dermatologic complications. Given that ACE2, the entry receptor for the causative coronavirus SARS-CoV-2, is expressed in multiple extrapulmonary tissues, direct viral tissue damage is a plausible mechanism of injury. In addition, endothelial damage and thromboinflammation, dysregulation of immune responses, and maladaptation of ACE2-related pathways might all contribute to these extrapulmonary manifestations of COVID-19. Here we review the extrapulmonary organ-specific pathophysiology, presentations and management considerations for patients with COVID-19 to aid clinicians and scientists in recognizing and monitoring the spectrum of manifestations, and in developing research priorities and therapeutic strategies for all organ systems involved.

# HEALTH IS DIFFERENT FROM HEALTHCARE

## ONE HEALTH



Animal  
Health

Human  
Health

Environmental  
Health

Maintaining the integrity of our **ecosystems** for **human health**,  
• **domestic animals** and our shared biodiversity •



SUSTAINABLE  
DEVELOPMENT **GOALS**  
17 GOALS TO TRANSFORM OUR WORLD



THINK CONTINUITY, THINK SUSTAINABILITY, THINK BORDERLESS

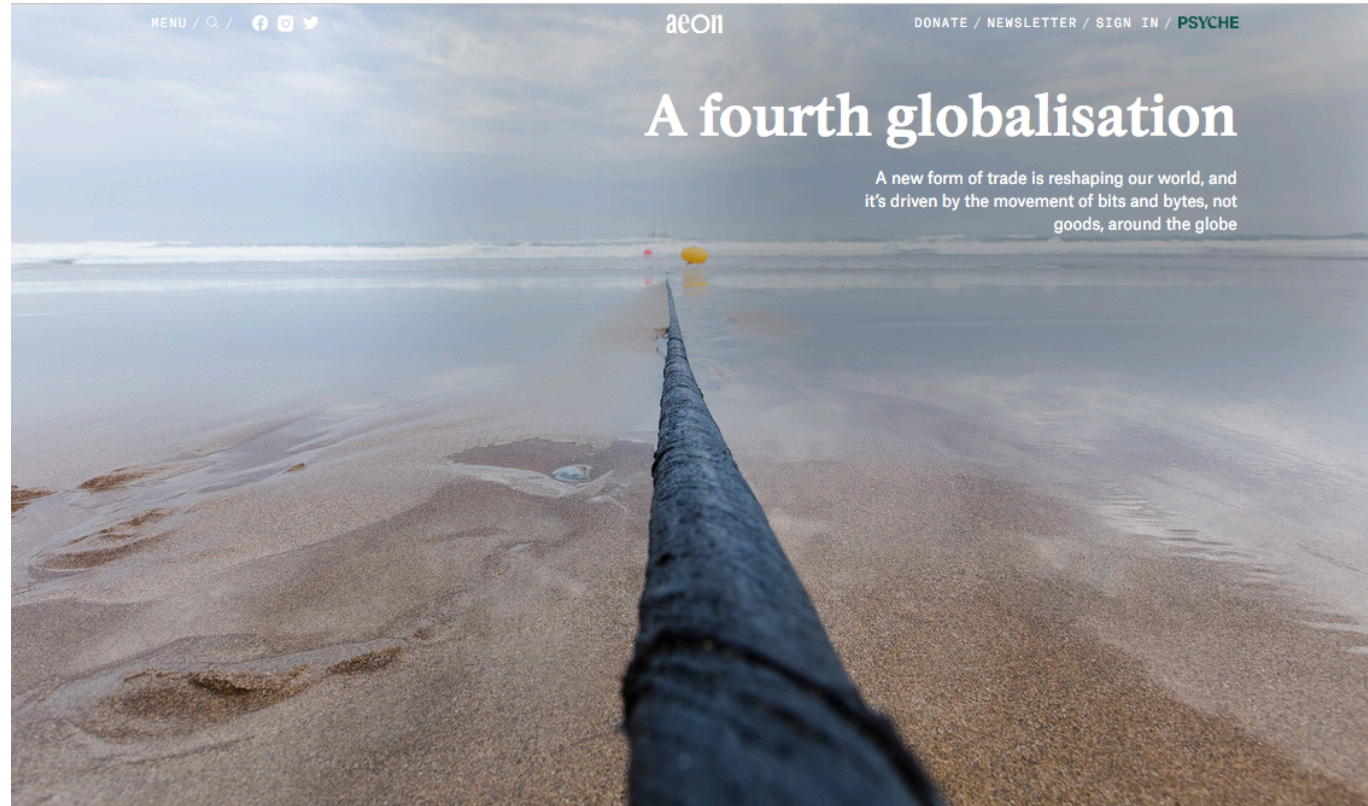
# The 4<sup>th</sup> Globalization & The 5<sup>th</sup> Industrial Revolution

*A new form of trade is reshaping our world, and it's driven by the movement of bits and bytes, not goods, around the globe*

Exports of raw materials no longer generated sufficient hard currency to service their debts

Trade in manufactured goods peaked in 2008. The flow of investment into foreign businesses and factories crashed that same year

The MAREA undersea cable, running 6,600 km from Virginia Beach in the United States to Sopelana, near Bilbao, in Spain. Photo courtesy of Microsoft



<https://aeon.co/essays/the-globalisation-of-ideas-will-be-different-than-that-of-goods>



# Deep Science of Deep Health

## *Sense and Nonsense:*

### *A Deep Problem in The Age of Deep Schemes, Deep Flaws and Deep Fakes*

This report has been written at the request of the Panel for the Future of Science and Technology (STOA) and managed by the Scientific Foresight Unit, within the Directorate-General for Parliamentary Research Services (EPRS) of the Secretariat of the European Parliament.

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Mariëtte van Huijstee PhD

<https://www.rathenau.nl/en/digital-governance/tackling-deepfakes-european-policy>

# The Signs and Science of Wellness, Wellbeing & Happiness:

## HEALTH ACCORDING TO AYURVEDA

Nāgārjuna नागार्जुन  
(c. 150 – c. 250 CE)



śūnyatā, or "emptiness"

*sarvaṃ ca yujyate tasya śūnyatā yasya yujyate  
sarvaṃ na yujyate tasya śūnyam yasya na  
yujyate*

**All is possible when emptiness is possible.  
Nothing is possible when emptiness is  
impossible.**

Desire for food at the right time  
Proper digestion

Timely elimination of body's  
waste: faeces, urine & flatus

Proper functioning of sense  
organs: eyes, nose, skin, tongue &  
ears

Peaceful, tranquil mind

Proper natural strength, bodily  
texture / skin texture

Proper sound sleep at proper  
time

Early natural waking without  
any discomfort

## Nagarjuna's 15 indicators of health

तद्लक्षणं पंचदशप्रकारं  
आहारकांक्षा स्वदनं विपाकः ।

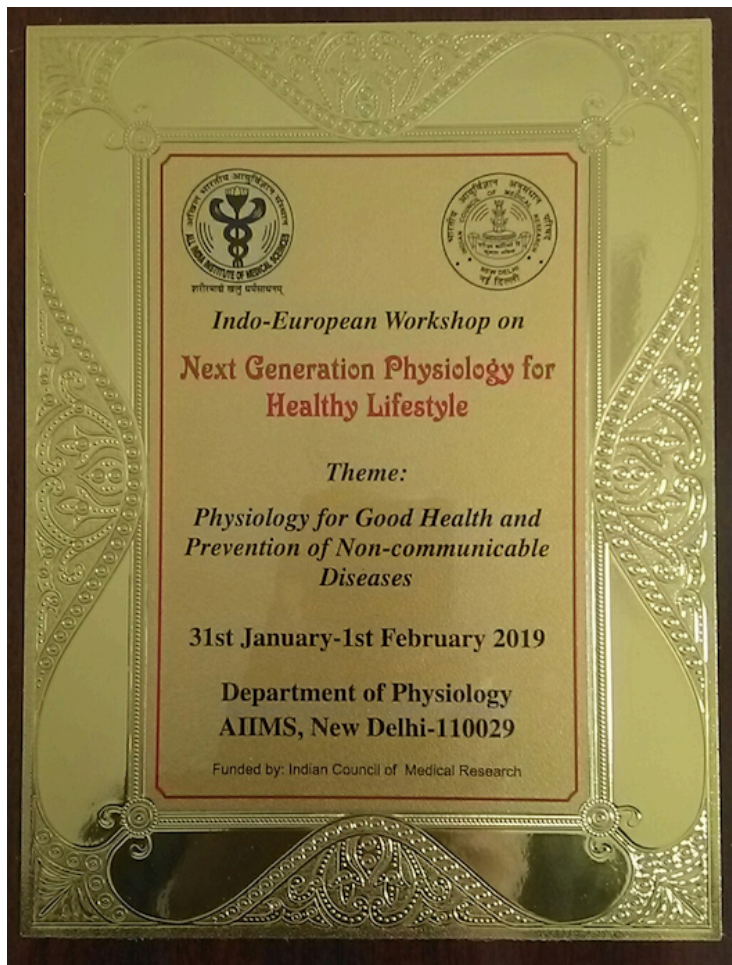
पुरीषमूत्रानिलसृष्टता च  
तथेन्द्रियार्थग्रहणे च शक्तिः ।।

मनस्सुखत्वं बलवर्णलाभः  
स्वप्नः सुखेन प्रतिबोधनं च ।

उपायतः साधनमस्य विद्यात्  
स्नेहादि यत् कर्म मया प्रदिष्टम् ।।

विद्यादिहारोग्यफलं नराणां  
धर्मार्थकाम प्रतिमोक्षसिद्धिः ।

# Deep Health: *Health For All, Anytime, Anywhere*



## Emergent Physiology Beyond Genomics:

Insights from India's Traditional Sciences



Medical University of Graz, Austria



<http://www.euroayurveda.eu>



French National Institute of Health  
and Medical Research


Physiologie de la Nutrition & Toxicologie,  
INSERM UMR 1231,  
Université de Bourgogne-Franche Comté (UBFC),  
Dijon, France





Open Access | Published: 12 May 2015

# Widespread seasonal gene expression reveals annual differences in human immunity and physiology

Xaquín Castro Dopico , Marina Evangelou, Ricardo C. Ferreira, Hui Guo, Marcin L. Pekalski, Deborah J. Smyth, Nicholas Cooper, Oliver S. Burren, Anthony J. Fulford, Branwen J. Hennig, Andrew M. Prentice, Anette-G. Ziegler, Ezio Bonifacio, Chris Wallace & John A. Todd 

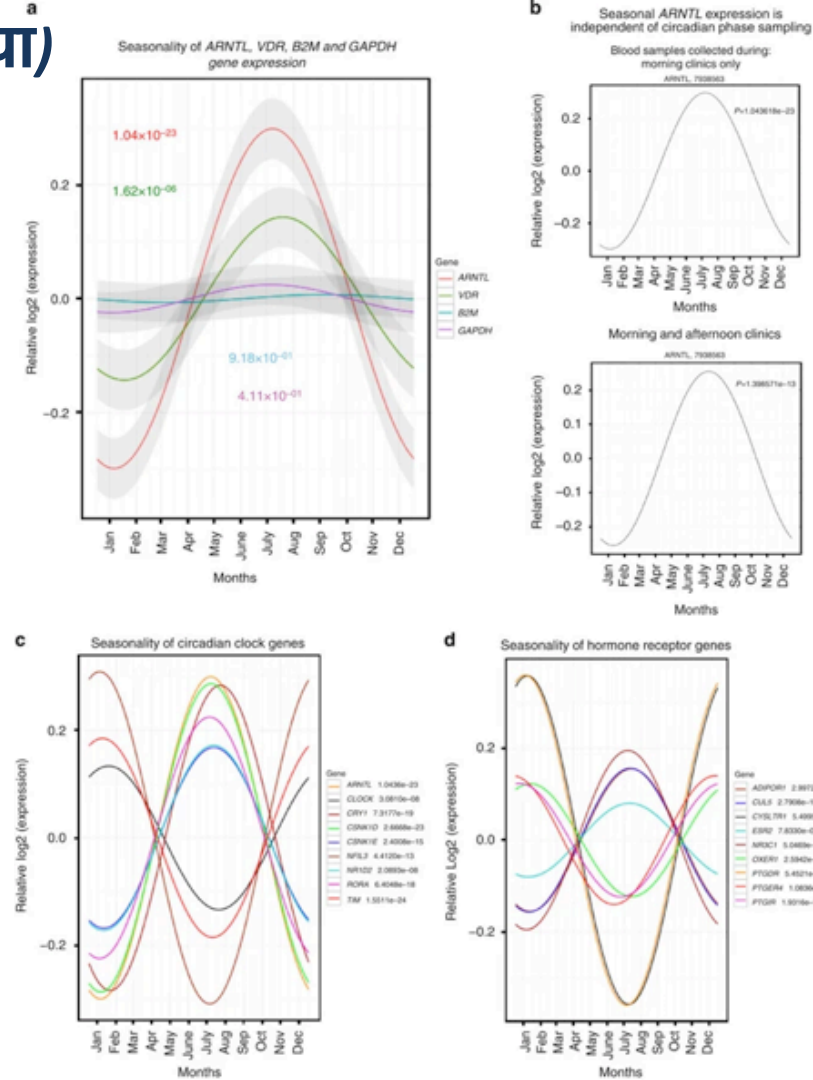
Nature Communications 6, Article number: 7000 (2015) | Cite this article

6911 Accesses | 173 Citations | 744 Altmetric | Metrics

## Abstract

Seasonal variations are rarely considered a contributing component to human tissue function or health, although many diseases and physiological processes display annual periodicities. Here we find more than 4,000 protein-coding mRNAs in white blood cells and adipose tissue to have seasonal expression profiles, with inverted patterns observed between Europe and Oceania. We also find the cellular composition of blood to vary by season, and these changes, which differ between the United Kingdom and The Gambia, could explain the gene expression periodicity. With regards to tissue function, the immune system has a profound pro-inflammatory transcriptomic profile during European winter, with increased levels of soluble IL-6 receptor and C-reactive protein, risk biomarkers for cardiovascular, psychiatric and autoimmune diseases that have peak incidences in winter. Circannual rhythms thus require further exploration as contributors to various aspects of human physiology and disease.

<https://www.nature.com/articles/ncomms8000>



### Figure 3: Seasonal gene expression in geographically distinct cohorts.

2,311 genes (2,922 unique probes) had increased expression in the summer (defined as June, July and August, mean fold change=1.2572) while 2,826 genes (3,436 unique probes) were upregulated in the winter (defined as December, January, February, mean fold change =1.3150)

**Seasonal variation was found in 9 of the 16 clock genes tested:** ARNTL, CLOCK, CRY1, CSNK1D, CSNK1E, NR1D2, RORA, TIMELESS30 and NFIL3 (which controls diurnal Th17 cell development in mice31) (Fig. 1c). Seven genes (CRY2, PER3, RORB, NPAS2, PER1, PER2 and NR1D1) did not show evidence for seasonal effects

(a) Seasonality was also observed in PBMCs collected from T1D patients in the United Kingdom (n=236 individuals). A total of 1,697 genes were seasonal in this data set. (b) The previously defined summer and winter genes from the BABYDIET data set maintained their seasonal expression patterns in the T1D samples. (c) PBMCs from asthmatic patients collected from different countries also showed seasonal gene expression. In the United Kingdom/Ireland (n=26 asthmatic individuals; 85 PBMC samples), 791 genes were seasonal, while 1,257 and 409 genes were seasonal in Australia (n=26 individuals; 85 samples) and United States (n=37 individuals; 123 samples), respectively. (d) Summer and winter BABYDIET genes maintained their seasonal expression patterns in the asthmatic PBMC samples, with their patterns inverted in Australia.

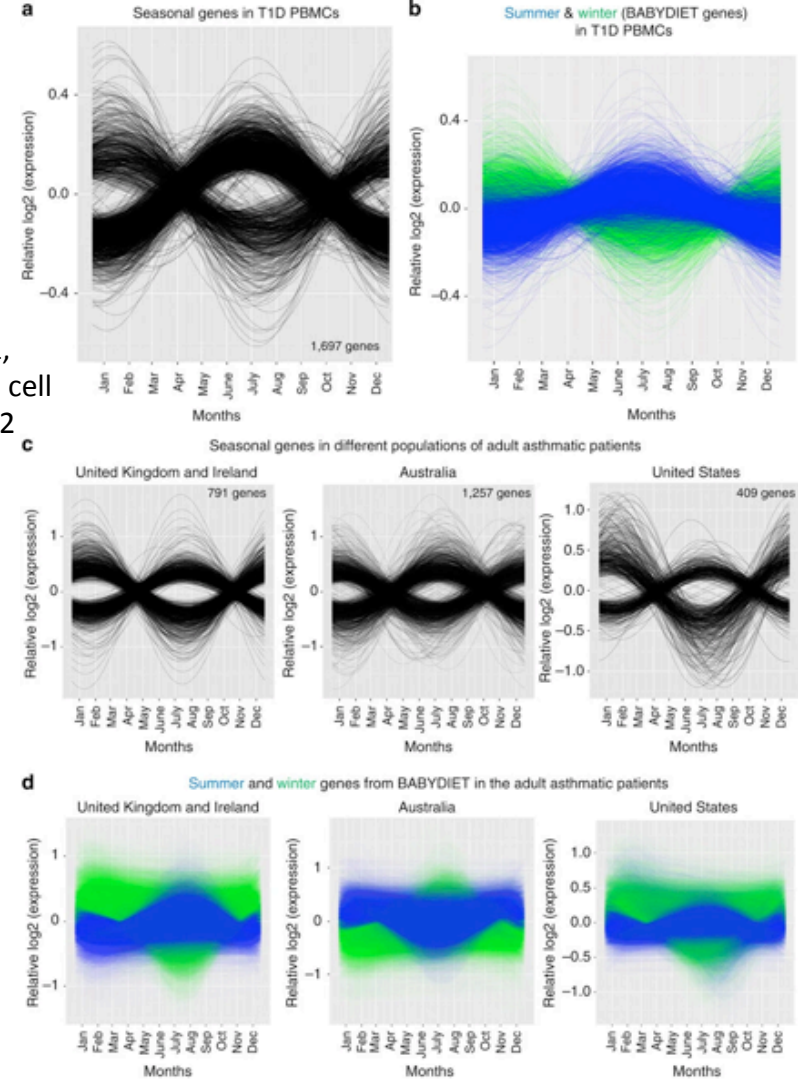
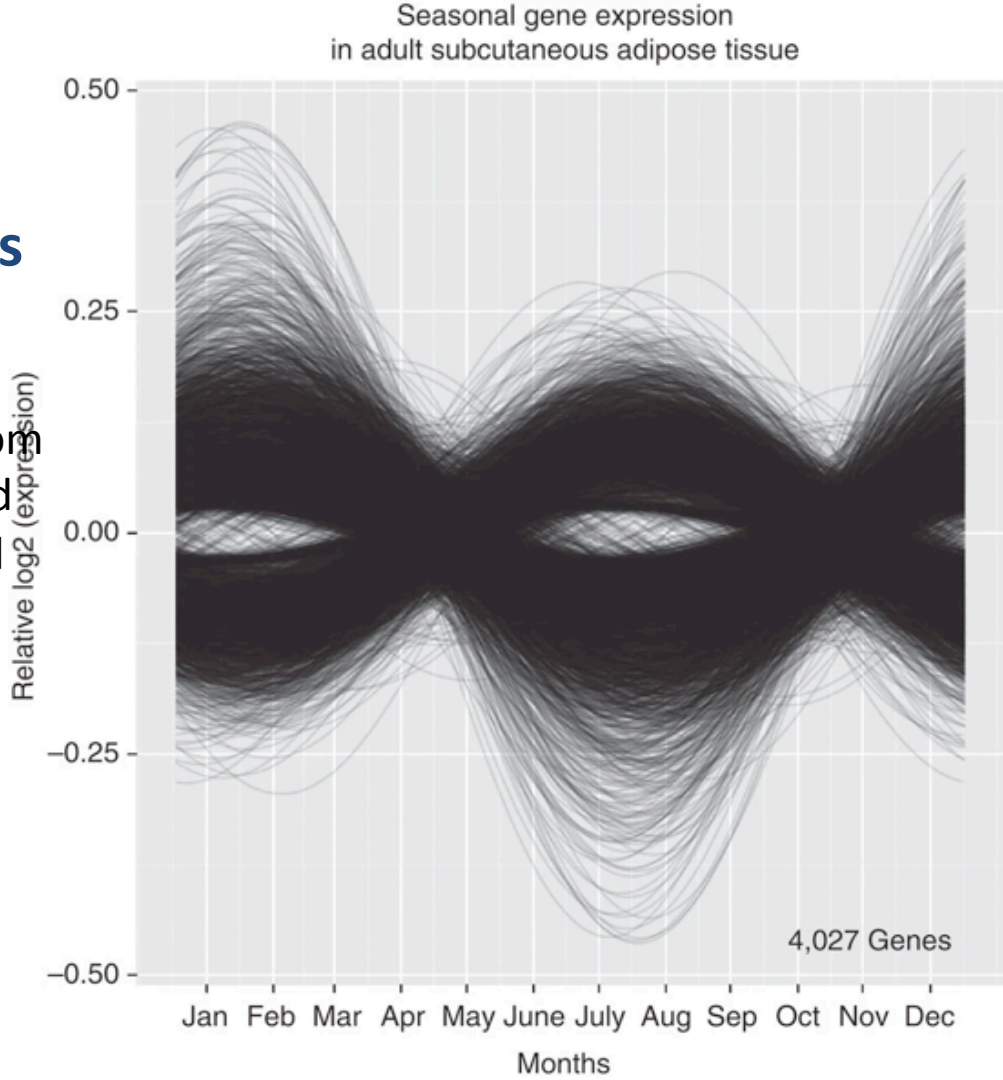


Figure 6: Seasonal gene expression in subcutaneous adipose tissue.

... **two distinct anti-phasic profiles**

In a collection of 856 female adult donors from the United Kingdom, 4,027 genes were found to be seasonal in adipose tissue. As observed in PBMCs, two distinct anti-phasic profiles were present.





# Singapore's Three Beyonds' for Future Health & Care:

- Beyond healthcare to health
- Beyond hospital to community
- Beyond quality to value.

**Singapore's health-care system: key features, challenges, and shifts**

The Lancet

Published: September 02, 2021 DOI: [https://doi.org/10.1016/S0140-6736\(21\)00252-X](https://doi.org/10.1016/S0140-6736(21)00252-X)

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)00252-X/fulltext?rss=yes](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00252-X/fulltext?rss=yes)

# The Circadian Code:

Lose Weight, Supercharge Your Energy, and Transform Your Health from Morning to Midnight

Professor Satchidananda Panda, Salk Institute

## A Smartphone App Reveals Erratic Diurnal Eating Patterns in Humans that Can Be Modulated for Health Benefits

### Highlights

- The daily eating pattern in healthy adults is highly variable from day to day
- More than half of the adults eat for 15 hr or longer every day
- Sleep duration parallels the fasting duration
- Reducing the daily eating duration can contribute to weight loss

Greater than 50% of the mammalian transcriptome exhibits diurnal rhythms in a tissue-specific manner (Zhang et al., 2014), the gut microbiome shows daily rhythms (Thaiss et al., 2014), the timing of food affects these rhythms in peripheral organs (Vollmers et al., 2009), and the targets of a large number of FDA approved drugs show circadian expression (Zhang et al., 2014).

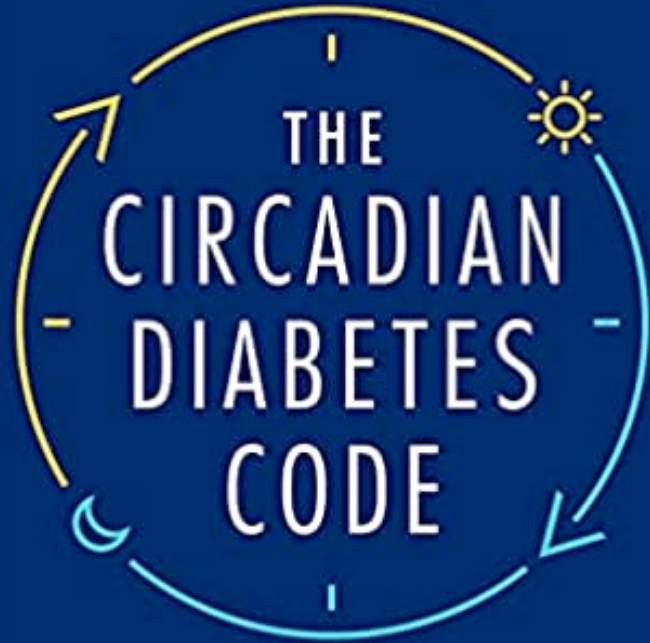
Vollmers C., Gill S., DiTacchio L., Pulivarthy S.R., Le H.D., Panda S. Time of feeding and the intrinsic circadian clock drive rhythms in hepatic gene expression. Proc. Natl. Acad. Sci. USA. 2009; 106: 21453-21458

Thaiss C.A. et al. Transkingdom control of microbiota diurnal oscillations promotes metabolic homeostasis. Cell. 2014; 159: 514-529

Zhang R. et al. A circadian gene expression atlas in mammals: implications for biology and medicine. Proc. Natl. Acad. Sci. USA. 2014; 111: 16219-16224

[https://www.cell.com/cell-metabolism/fulltext/S1550-4131\(15\)00462-3](https://www.cell.com/cell-metabolism/fulltext/S1550-4131(15)00462-3)

Discover the *Right Time* to Eat,  
Sleep, and Exercise to Prevent and Reverse  
Prediabetes and Diabetes



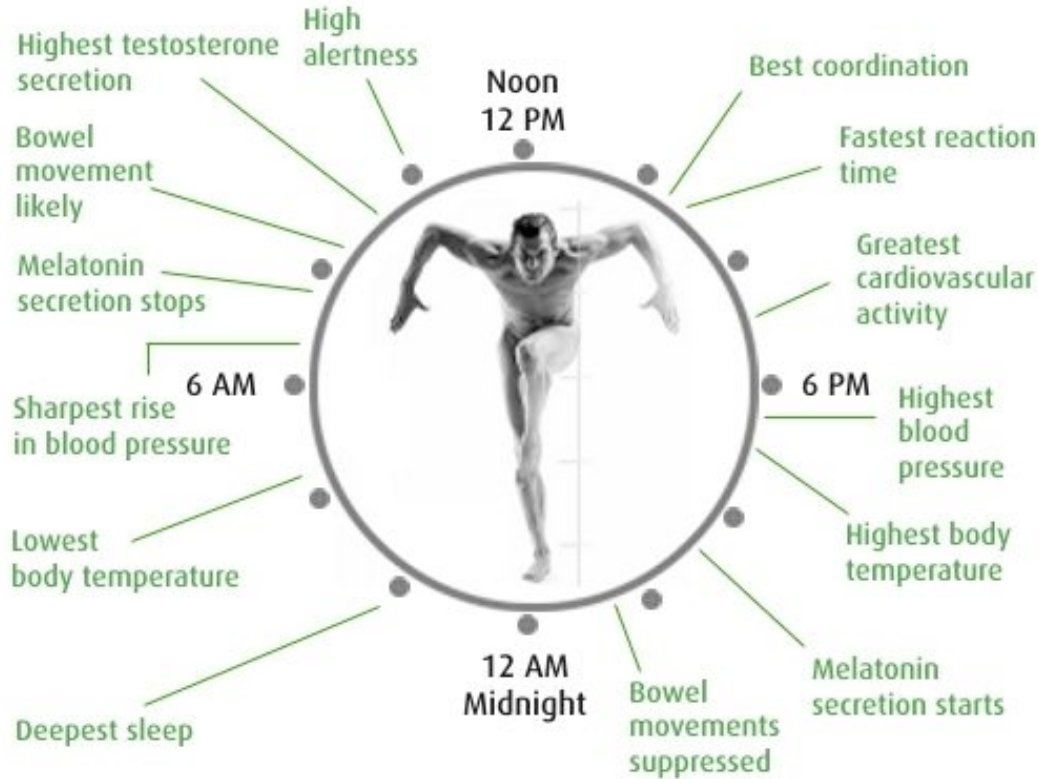
**SATCHIN PANDA, PhD**  
*Author of THE CIRCADIAN CODE*

The Circadian Diabetes Code: Discover the  
Right Time to Eat, Sleep, and Exercise to  
Prevent and Reverse Prediabetes and Diabetes  
Hardcover – November 9, 2021

<https://www.amazon.com/Circadian-Diabetes-Code-Discover-Prediabetes/dp/0593231872>



# The blueprint of the body's biological clock

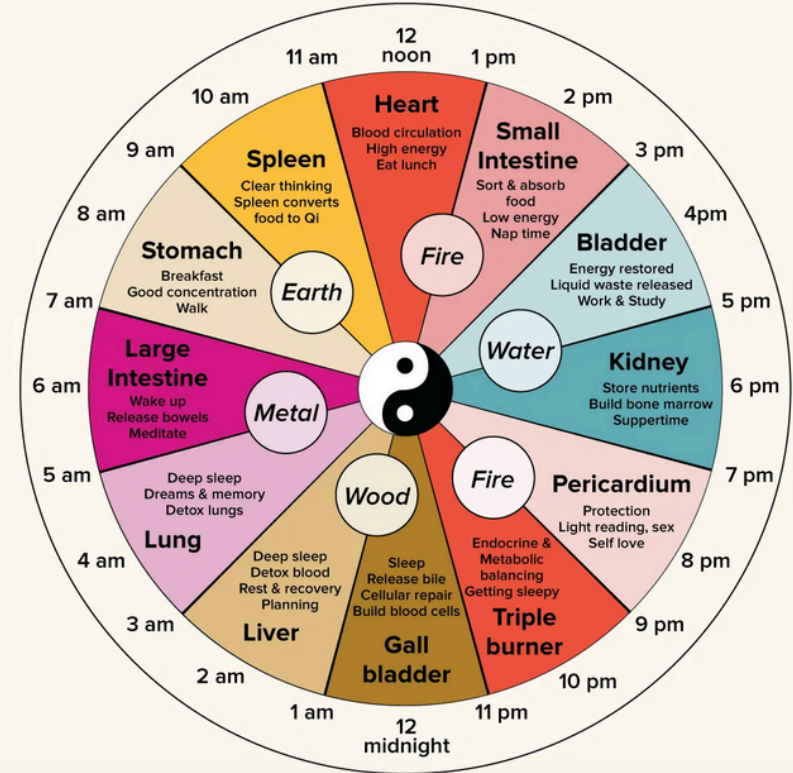


# How can you use the clock to benefit your health?

“There are clocks  
in all tissues of  
the body - not  
only the brain.”

*2017 Medicine Laureate Michael Rosbash*

 Nobelprize.org



<https://www.healthline.com/health/chinese-body-clock#research>

# The Five Senses in Health & Healing: The Mechanisms

## The Nobel Prizes in Physiology or Medicine 2004 & 2021



Photo from the Nobel Foundation archive.

Richard Axel

Prize share: 1/2



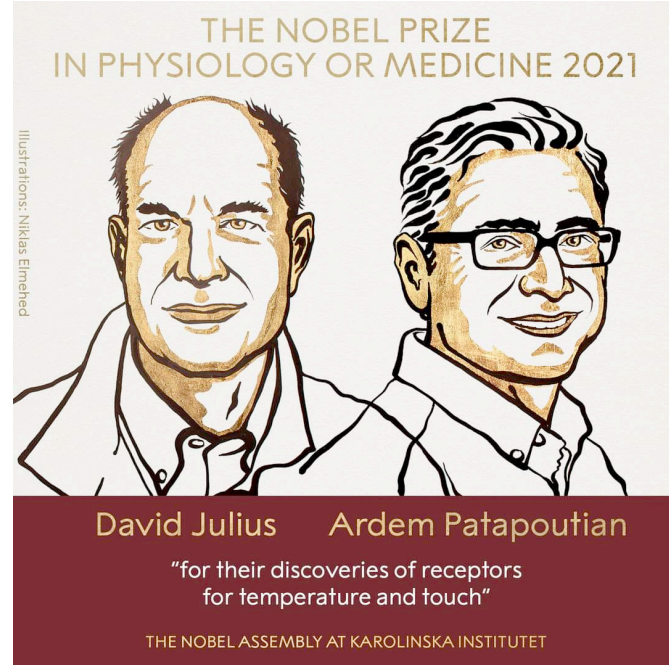
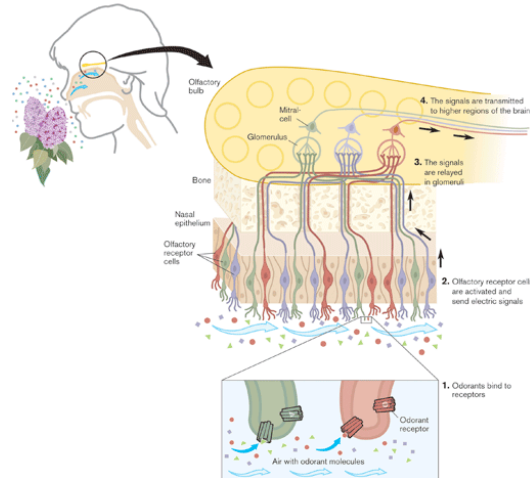
Photo from the Nobel Foundation archive.

Linda B. Buck

Prize share: 1/2

**"for their discoveries of odorant receptors and the organization of the olfactory system."**

Odorant Receptors and the Organization of the Olfactory System





# "Ayurveda: The Meaning of Life—Awareness, Environment, and Health"

March 21-22, 2009, Milan, Italy

## Review Article

### **Advent of a Link between Ayurveda and Modern Health Science: The Proceedings of the First International Congress on Ayurveda, "Ayurveda: The Meaning of Life—Awareness, Environment, and Health" March 21-22, 2009, Milan, Italy**

**Antonio Morandi,<sup>1,2</sup> Carmen Tosto,<sup>1</sup> Guido Sartori,<sup>1,2,3</sup> and Paolo Roberti di Sarsina<sup>4</sup>**

<sup>1</sup> Ayurvedic Point, C.so Sempione 63, 20149 Milan, Italy

<sup>2</sup> SSIMA, Italian Scientific Society for Ayurvedic Medicine, C.so Sempione 63, 20149 Milan, Italy

<sup>3</sup> Atah, Italian Association of Ayurvedic Patients, Via C. Boldrini 14, 40121 Bologna, Italy

<sup>4</sup> Department of Sociology and Social Research, Observatory and Methods for Health, University of Milano-Bicocca, Piazza dell'Ateneo Nuovo 1, 20126 Milan, Italy

Correspondence should be addressed to Antonio Morandi, dr.morandi@ayurvedicpoint.it

Received 1 August 2010; Accepted 16 September 2010

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The First International Congress on Ayurveda was held in Milan, Italy in March 2009 and it has been the first scientific event of this kind in western world. This groundbreaking international congress was devoted to human being as the product of interactions between Awareness, Environment and Health, subjects that the West tends to consider separate and independent, but that are believed deeply connected in Ayurveda, whose interdependence defines "The Meaning of Life". The Congress established a bridge between Indian and western philosophy, scientific and biomedical thinking in order to expand knowledge and healthcare. Main attention and address of the invited speakers was on the concept of "relationships" that, connecting living beings with environment, shape Nature itself. This concept is central in Ayurveda but is also common to other western scientific disciplines such as quantum physics and epigenetics that, in the four Sessions of the Congress, were represented by eminent experts. The importance of this event was underlined by the attendance of more than 400 participants and by noteworthy institutional endorsements, that added a significant political dimension of high social impact due to the topical period for CAM acceptance and integration in Europe.



**Professor B. D. Josephson**, 1973 Nobel Laureate in Physics (Department of Physics, University of Cambridge, UK), in his inaugural lecture on **"Eastern Philosophy and Western Science,"** considered the problems with **"objective reality"** that is central to quantum theory, since ...

**... reality is too complex to be reduced to a formula in general.**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2958631/>

# SQUID-based measurement of biomagnetic fields

M. P. Janawadkar, T. S. Radhakrishnan, K. Gireesan, C. Parasakthi, S. Sengottuvel, Rajesh Patel, C. S. Sundar and Baldev Raj  
Indira Gandhi Centre for Atomic Research (IGCAR, <http://www.igcar.gov.in/>)

## GENERAL ARTICLES

## SQUID-based measurement of biomagnetic fields

M. P. Janawadkar\*, T. S. Radhakrishnan, K. Gireesan, C. Parasakthi, S. Sengottuvel, Rajesh Patel, C. S. Sundar and Baldev Raj

*This article reports the establishment of the first facility in India for the superconducting quantum interference device (SQUID) based measurement of extremely weak magnetic fields such as those associated with the physiological activities of human heart (~50 pico-Tesla) and human brain (100 femto-Tesla to 2 pico-Tesla). The facility comprises a magnetically shielded room capable of attenuating ambient magnetic noise by 60 dB at 1 Hz, connected by waveguides to a RF shielded room capable of attenuating RF noise by 100 dB. Magnetically shielded room houses a fibre glass reinforced plastic cryostat with four SQUID channels and the RF shielded room houses the data acquisition system. The overall system noise, measured in each channel, is under 12 fT/√Hz. Several biomagnetic fields (magnetocardiogram,  $\alpha$ -rhythm of brain and auditory evoked response) have been successfully measured in this facility with a high signal-to-noise ratio.*

**Keywords:** Biomagnetism, magnetoencephalography, magnetocardiography, superconducting quantum interference device.

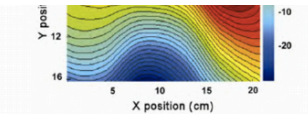


Figure 10. Iso-field contour map constructed at  $\beta$  peak using the MCG data. The sources responsible for the recorded activity are seen to be more complex than a single equivalent current dipole.

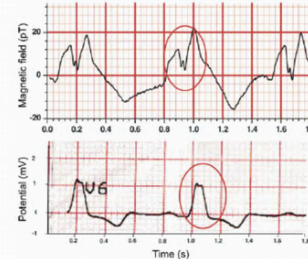


Figure 11. ECG and MCG of a subject with left bundle branch block; MCG data shows clearly resolved notched QRS complex as opposed to the ECG data.

signal.

The signal associated with eye-saccades and eye-blinks has also been measured by positioning the sensor just above the eyebrow line and signal amplitude of about 2 pT was observed at each eyeblink (Figure 13). It may be noted that such parasitic signals (associated with the eyeblinks, swallowing action, teeth-squeeze, etc.), which are inevitable in a recording session, have to be identified as artefacts during an MEG experiment and eliminated during the data processing. Response of the brain to the presentation of visual/auditory/tactile stimuli tends to be of the order of 100 fT and is generally masked by the

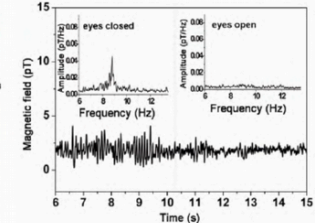


Figure 12.  $\alpha$  rhythm monitored from the occipital lobe of the brain; the peak at 9 Hz gets suppressed when the eyes are open (10.5 to 15 s).

CURRENT SCIENCE, VOL. 99, NO. 1, 10 JULY 2010

43

Current Science Vol. 99, No. 1 (10 July 2010), pp. 36-45

<https://www.jstor.org/stable/24108348?seq=1>

# SQUID-based measurement of biomagnetic fields

M. P. Janawadkar, T. S. Radhakrishnan, K. Gireesan, C. Parasakthi, S. Sengottuvel, Rajesh Patel, C. S. Sundar and Baldev Raj

## GENERAL ARTICLES

### SQUID-based measurement of biomagnetic fields

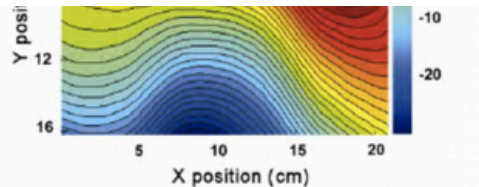
M. P. Janawadkar\*, T. S. Radhakrishnan, K. Gireesan, C. Parasakthi, S. Sengottuvel, Rajesh Patel, C. S. Sundar and Baldev Raj

This article reports the establishment of the first facility in India for the superconducting quantum interference device (SQUID) based measurement of extremely weak magnetic fields such as those associated with the physiological activities of human heart (~50 pico-Tesla) and human brain (100 femto-Tesla to 2 pico-Tesla). The facility comprises a magnetically shielded room capable of attenuating ambient magnetic noise by 60 dB at 1 Hz, connected by waveguides to a RF shielded room capable of attenuating RF noise by 100 dB. Magnetically shielded room houses a fibre glass reinforced plastic cryostat with four SQUID channels and the RF shielded room houses the data acquisition system. The overall system noise, measured in each channel, is under 12 fT/√Hz. Several biomagnetic fields (magnetocardiogram,  $\alpha$ -rhythm of brain and auditory evoked response) have been successfully measured in this facility with a high signal-to-noise ratio.

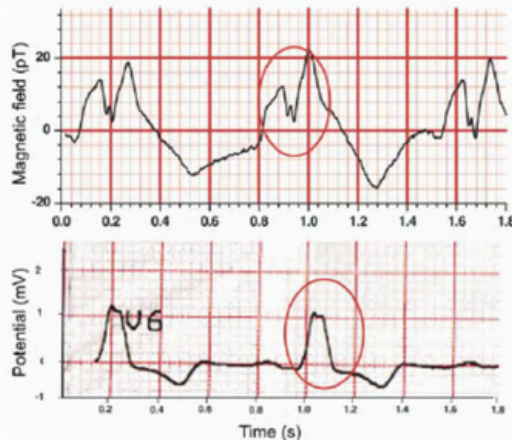
**Keywords:** Biomagnetism, magnetoencephalography, magnetocardiography, superconducting quantum interference device.

Current Science Vol

<https://www.jsr>



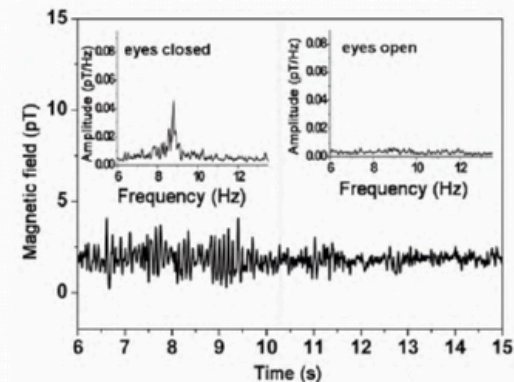
**Figure 10.** Iso-field contour map constructed at R peak using the MCG data. The sources responsible for the recorded activity are seen to be more complex than a single equivalent current dipole.



**Figure 11.** ECG and MCG of a subject with left bundle branch block; MCG data shows clearly resolved notched QRS complex as opposed to the ECG data.

The signal associated with eye-saccades and eye-blinks has also been measured by positioning the sensor just above the eyebrow line and signal amplitude of about 2 pT was observed at each eyeblink (Figure 13). It may be noted that such parasitic signals (associated with the eyeblinks, swallowing action, teeth-squeeze, etc.), which are inevitable in a recording session, have to be identified as artefacts during an MEG experiment and eliminated during the data processing. Response of the brain to the presentation of visual/auditory/tactile stimuli tends to be of the order of 100 fT and is generally masked by the

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**Figure 12.**  $\alpha$  rhythm monitored from the occipital lobe of the brain; the peak at 9 Hz gets suppressed when the eyes are open (10.5 to 15 s).

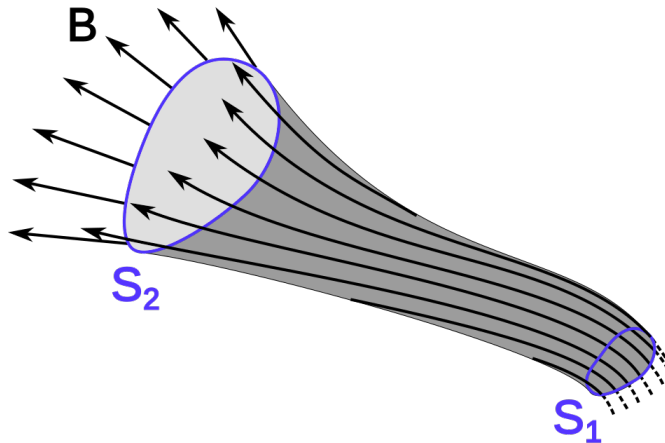


# The Science of Meridians

## The theoretical background of meridians, bioelectrical energy and nadis

Fröhlich's hypothesis of coherence in biological systems

introduced by Herbert Fröhlich in the late 1960s



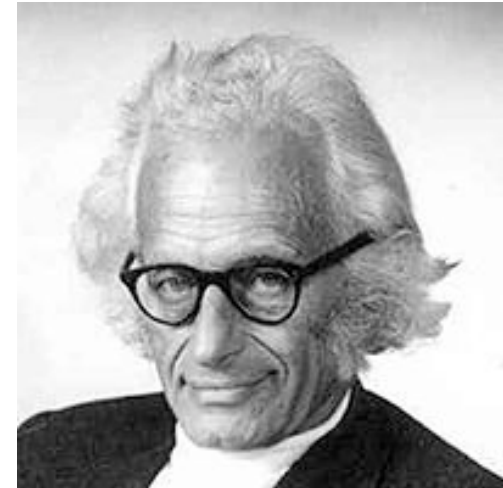
Fröhlich proposed a theory of coherent excitations in biological systems known as Fröhlich coherence.

A system that attains this state of coherence is known as a Fröhlich condensate.

### Herbert Fröhlich FRS

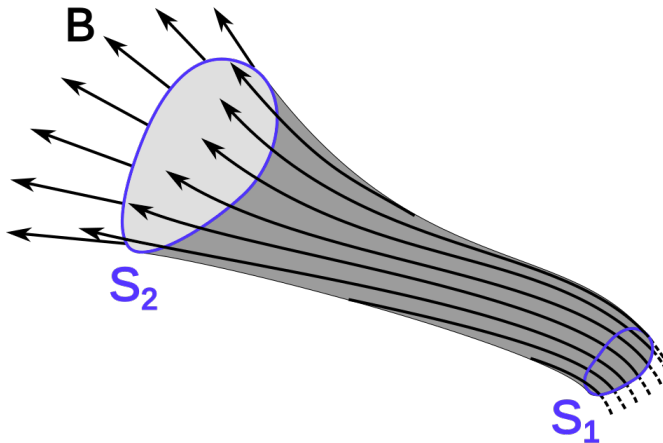
(9 December 1905 – 23 January 1991)

a German-born British physicist



# The theoretical background of bioelectrical energy & the science of meridians

Fröhlich's hypothesis of coherence in biological systems  
introduced by Herbert Fröhlich in the late 1960s



Herbert Fröhlich and F.  
Kremer **Coherent Excitations  
in Biological Systems**  
(Springer-Verlag, 1983) ISBN  
978-3-642-69186-7

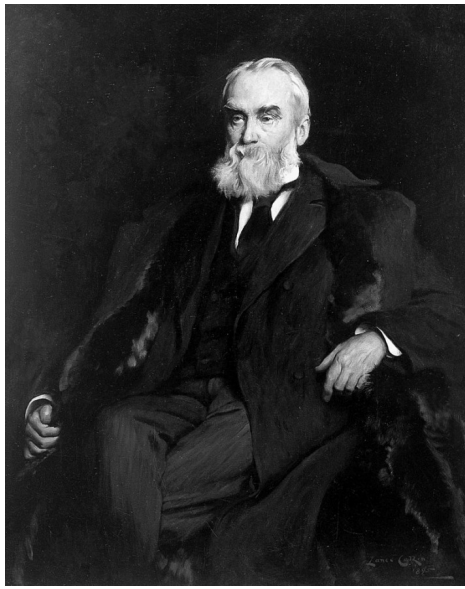
Herbert Fröhlich, editor  
**Biological Coherence and  
Response to External Stimuli**  
(Springer, 1988) ISBN  
978-3-642-73309-3

**Herbert Fröhlich FRS**

(9 December 1905 – 23 January 1991)

a German-born British physicist





# John Hughlings Jackson, FRS

(4 April 1835 – 7 October 1911)

English neurologist

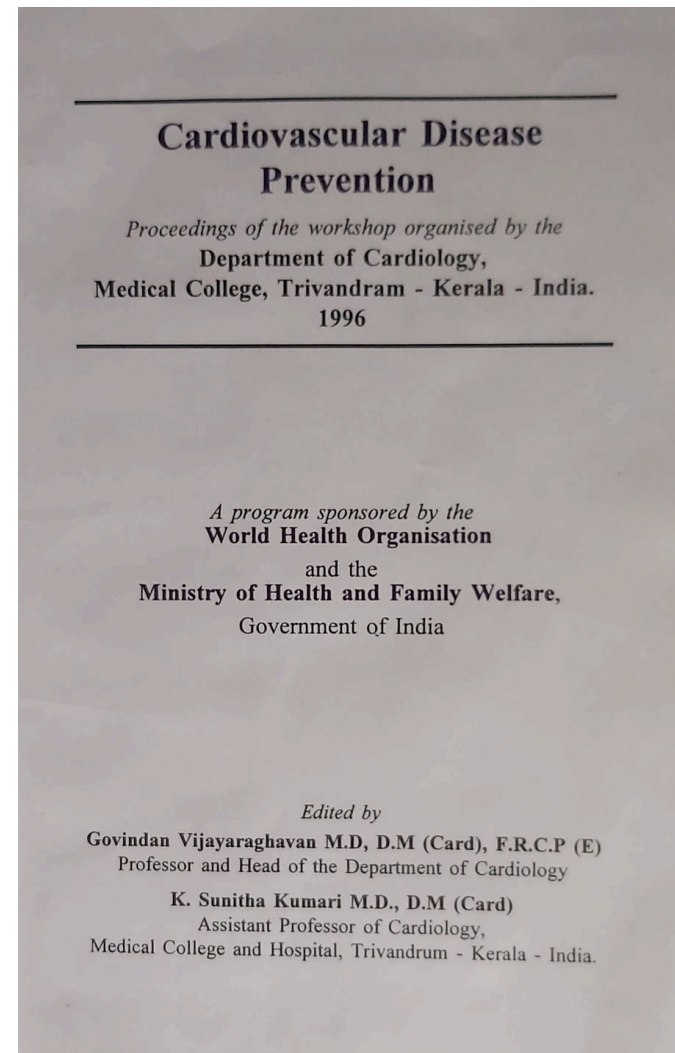
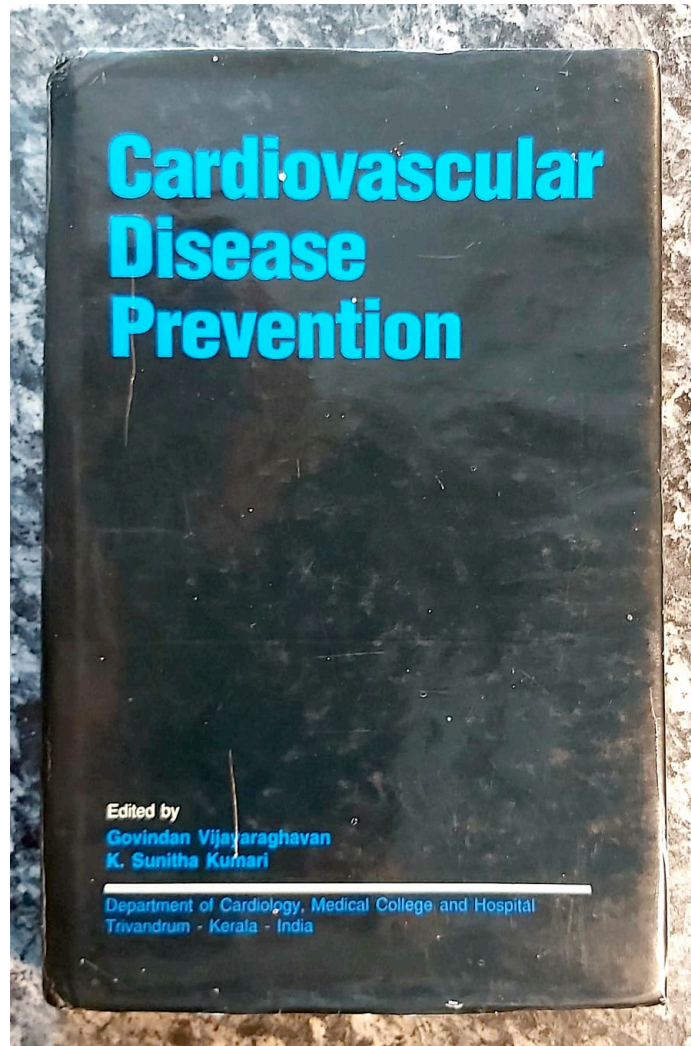
best known for his research on epilepsy.

**“It takes 50 years to get a bad idea  
out of medicine  
and  
100 to get a good idea in.”**



# P5 Medicine:

Personalized,  
Predictive,  
Preventive,  
Participatory,  
Precision  
Medicine



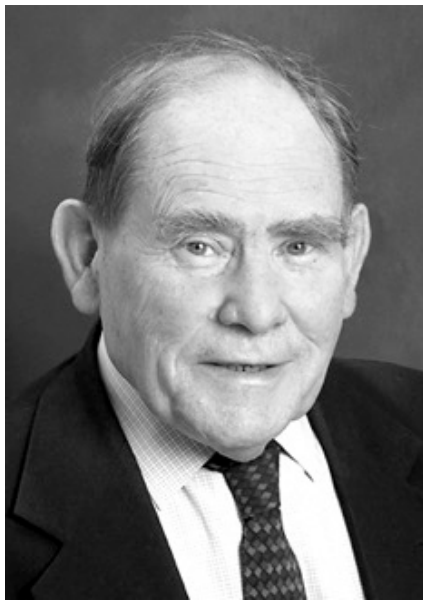
## **Cardiovascular Disease Prevention**

*Proceedings of the workshop organised by the  
Department of Cardiology,  
Medical College, Trivandram - Kerala - India.  
1996*

*A program sponsored by the  
World Health Organisation  
and the  
Ministry of Health and Family Welfare,  
Government of India*

*Edited by*  
**Govindan Vijayaraghavan M.D, D.M (Card), F.R.C.P (E)**  
Professor and Head of the Department of Cardiology  
**K. Sunitha Kumari M.D., D.M (Card)**  
Assistant Professor of Cardiology,  
Medical College and Hospital, Trivandrum - Kerala - India.





**Sydney Brenner**

Born: 13 January 1927, South Africa

Died: 5 April 2019, Singapore

### Prize motivation:

"for their discoveries concerning genetic regulation of organ development and **programmed cell death**"

How does the egg form the organism?

## Teaching Biologists ~~AND DOCTORS~~ Another Language!

The last line of the last paragraph from Sydney's autobiography is fascinating:

[http://www.nobelprize.org/nobel\\_prizes/medicine/laureates/2002/brenner-bio.html](http://www.nobelprize.org/nobel_prizes/medicine/laureates/2002/brenner-bio.html)

*I am still, at the age of 76, excited by scientific research and the prospect of what can be done in biology.*

*Science is something one is tied to for life and one should never retire from anything until one has secured one's next job.*

**The endless quest for knowledge will continue as long as humans exist.**



I copy below, from the Editorial:

*"In one way, you could say all the genetic and molecular biological work of the last 60 years could be considered a long interlude...We have come full circle—back to the problems left behind unsolved. How does a wounded organism regenerate exactly the same structure it had before? How does the egg form the organism? **In the next 25 years, we are going to have to teach biologists another language...I don't know what it's called yet; nobody knows...**" (Sydney Brenner)*

**Ayurveda is one exemplary introduction to and what is required for Teaching Biologists Another Language!**

# Complementary and Integrative Medicine (CIM): *Professional and Interprofessional Collaborations (Competencies) (IPC)*



## Evaluation of an Interprofessional Educational Module on Complementary and Integrative Medicine

**Introduction:** In order to prepare nursing, physiotherapy and medical students for providing (evidence-based) advice about complementary and integrative medicine (CIM) to their patients, an interprofessional educational module was developed based on students', patients' and professionals' needs. Aim of this study was to evaluate this module in regard to structure and organisation as well as professional and interprofessional competencies.

Co-Authors: Prof. Dr. Jost Steinhäuser - Physician -  
Institute of Family Medicine, University Hospital Schleswig-Holstein, Campus Lübeck

### Speakers

Dr Kristina Flaegel, Physician, Institute of Family Medicine,  
University Hospital Schleswig-Holstein, Campus Luebeck -  
Germany

**Determinants of interprofessional collaboration in complementary medicine to develop an educational module “complementary and integrative medicine” for undergraduate students: A mixed-methods study**

The interviews with 20 participants revealed four main themes: profession-specific aspects, communication, health care system-associated factors, and the influence of CM on interprofessional dynamics.

Hence, teaching professional competencies and an equal understanding of evidence-based medicine seems necessary to promote IPC within CM.

# Prof. Dr. med. Stefanie Joos

Institute for General Practice and Interprofessional Care,  
University Hospital and Faculty of Medicine Tuebingen, Tuebingen, Germany

Ärztliche Direktorin

Fachärztin für Allgemeinmedizin  
Zusatzqualifikation Naturheilverfahren, Akupunktur  
<https://www.medizin.uni-tuebingen.de/de/das-klinikum/mitarbeiter/1578>



## **Integration of complementary and integrative medicine competencies in general practice postgraduate education - development of a novel competency catalogue in Germany**

Institute for General Practice and Interprofessional Care, University Hospital and Faculty of Medicine Tuebingen, Tuebingen, Germany.  
[jan.valentini@med.uni-tuebingen.de](mailto:jan.valentini@med.uni-tuebingen.de).

Institute for General Practice and Interprofessional Care, University Hospital and Faculty of Medicine Tuebingen, Tuebingen, Germany.  
Institute for General Practice, Goethe University, Frankfurt, Germany.

PDF is available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8496071/>

# Single-Cell Multiomics: **Sebastian Pott**

## A Spatial Cell Type Reference Atlas of the Adult Human Heart

To quantitatively assess the similarities and differences in transcription profiles from single-cell and single-nucleus

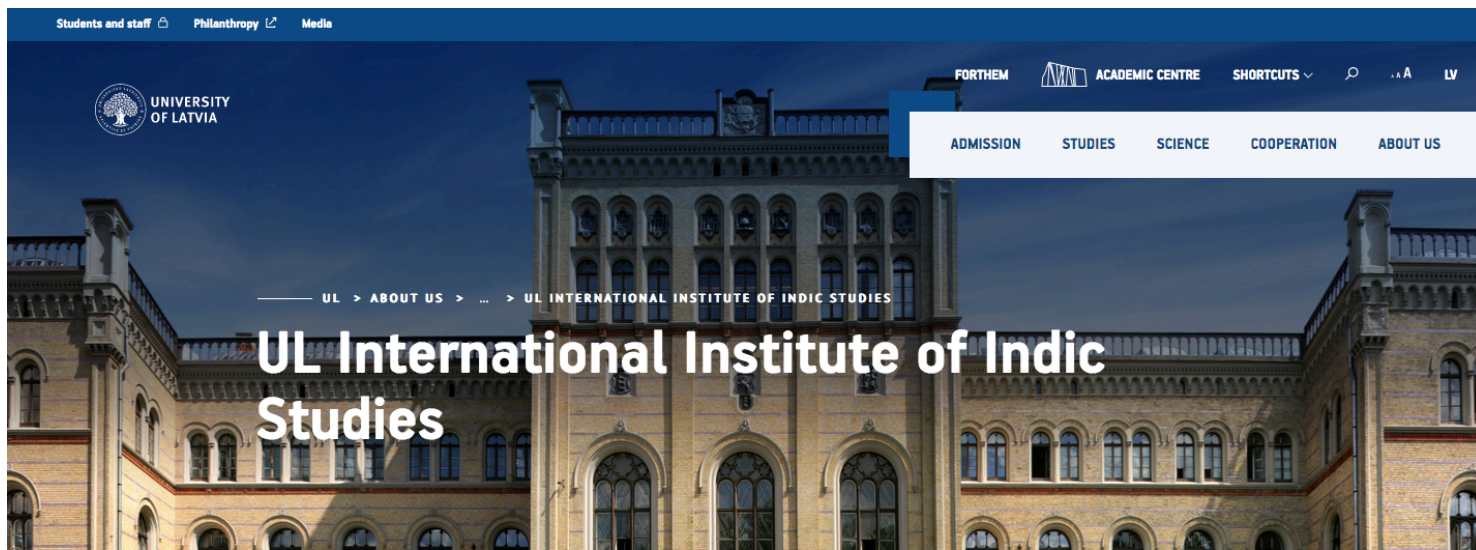


Selewa, A., Dohn, R., Eckart, H., Lozano, S., Xie, B., Guachat, E., Elorbany, R., Rhodes, K., Burnett, J., Gilad, Y., Pott, S., & Basu, A. (2020). Systematic Comparison of High-throughput Single-Cell and Single-Nucleus Transcriptomes during Cardiomyocyte Differentiation. *Scientific Reports*, 10, 1535. <https://doi.org/10.1038/s41598-020-58327-6>

<https://voices.uchicago.edu/spottlab/projects/>



# Dr. med. Valdis Pīrāgs MD PhD



By decision of the Senate of the University of Latvia (hereinafter – UL) of 20 December 2018, the Centre of Indian Studies and Culture of the UL and Complementary Medicine Centre of the UL were reorganised by establishing the UL International Institute of Indic Studies (hereinafter – Institute). The Institute is a basic academic unit of the UL for organizing fundamental and applied research in the medicine and humanities sectors, as well as for promoting the academic exchange of students and university lecturers between Latvia and India.

#### The objectives of the Institute are as follows:

- to promote research on India-related issues, develop and implement educational programmes, scientific research in Latvia, India and other countries;

<http://www.luindia.lv>

Baznīcas iela 5, Rīga, LV-1010

<https://www.lu.lv/en/about-us/structure/institutes/ul-international-institute-of-indic-studies/>

# Prof. Kishor Patwardhan BAMS, MD, PhD



Coordinator and Principal Investigator of Ayurveda Network, a component under Subject-Based Network of **"Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching" (PMMNMTT)** of Ministry of Human Resource Development, Government of India

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## Ayurveda Network

Faculty of Ayurveda, Banaras Hindu University  
Established under Subject Based Network component of PMMNMTT scheme of Ministry of Education

सत्यमेव जयते  
Ministry of Education  
Government of India

AYURVEDA NETWORK  
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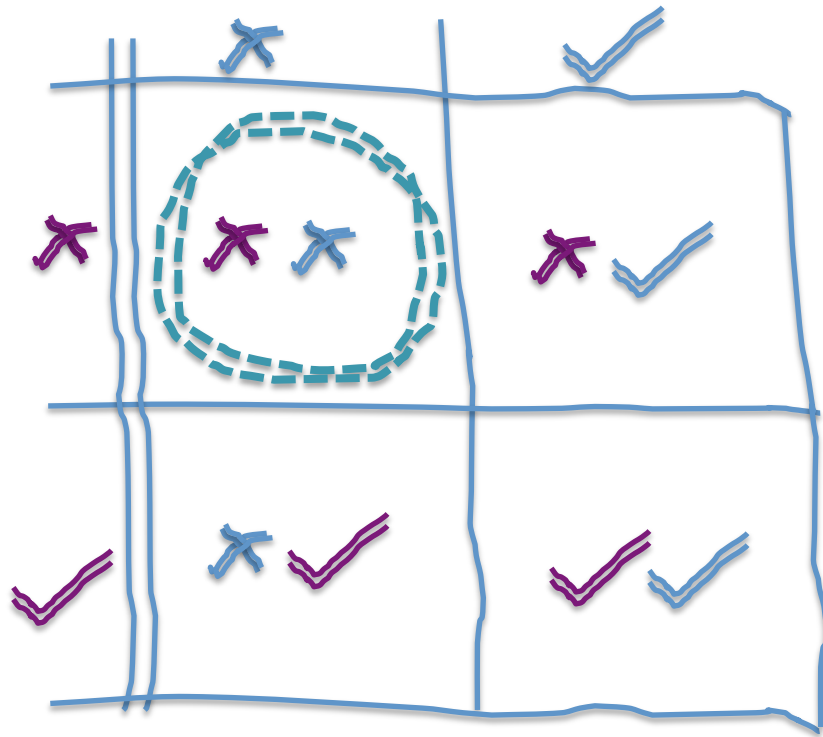
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<https://ayurvedanetworkbhu.com/>

# Complementary & Integrated Medicine in Global Health Dialogues

Horizon Scanning, Mapping, Identifying, Crystallizing & Implementing Research Priorities and  
Converting into Programmes and Projects and Enterprises and Employment



# List of high consequence infectious diseases

A list of HCIDs has been agreed by a joint Public Health England (PHE) and NHS England HCID Programme:

Contact HCID	Airborne HCID
Argentine haemorrhagic fever (Junin virus)	Andes virus infection (hantavirus)
Bolivian haemorrhagic fever (Machupo virus)	Avian influenza A H7N9 and H5N1
Crimean Congo haemorrhagic fever (CCHF)	Avian influenza A H5N6 and H7N7
Ebola virus disease (EVD)	Middle East respiratory syndrome (MERS)
Lassa fever	Monkeypox
Lujo virus disease	Nipah virus infection
Marburg virus disease (MVD)	Pneumonic plague (Yersinia pestis)
Severe fever with thrombocytopenia syndrome (SFTS)	Severe acute respiratory syndrome (SARS)*

Human SARS-CoV BJ01	655 - GICASYHTVSSL----RSTS - 670
Human SARS-CoV CUHK-W1	655 - GICASYHTVSSL----RSTS - 670
Human SARS-CoV Tor2	655 - GICASYHTVSSL----RSTS - 670
Human SARS-CoV Frankfurt-1	655 - GICASYHTVSSL----RSTS - 670
Human SARS-CoV Urbani	655 - GICASYHTVSSL----RSTS - 670
Civet SARS-CoV civet020	655 - GICASYHTVSSL----RSTS - 670
Civet SARS-CoV sz16	655 - GICASYHTVSSL----RSTS - 670
Raccoon dog SARS-CoV A030	655 - GICASYHTVSSL----RSTS - 670
SARS-CoV-2	669 - GICASYQTQNSPRARSVA - 688
Pangolin CoV MP789	n/a - GICASYQTQNS----RSVS - n/a
Bat SARSr-CoV RaTG13	669 - GICASYQTQNS----RSVA - 684
Bat SARSr-CoV LYRa11	659 - GICASYHTASLL----RNTD - 674
Bat SARSr-CoV LYRa3	659 - GICASYHTASLL----RNTG - 674
Bat SARSr-CoV RsSHC014	656 - GICASYHTVSSL----RSTS - 671
Bat SARSr-CoV Rs4084	656 - GICASYHTVSSL----RSTS - 671
Bat SARSr-CoV WIV1	656 - GICASYHTVSSL----RSTS - 671
Bat SARSr-CoV Rs3367	656 - GICASYHTVSSL----RSTS - 671
Bat SARSr-CoV Rs7327	656 - GICASYHTVSSL----RSTS - 671
Bat SARSr-CoV Rs9401	656 - GICASYHTVSSL----RSTS - 671
Bat SARSr-CoV Rs4231	655 - GICASYHTVSSL----RSTS - 670
Bat SARSr-CoV WIV16	655 - GICASYHTVSSL----RSTS - 670
Bat SARSr-CoV Rs4874	655 - GICASYHTVSSL----RSTS - 670
Bat SARSr-CoV ZC45	646 - GICASYHTASLL----RSTS - 661
Bat SARSr-CoV ZXC21	645 - GICASYHTASLL----RSTG - 660
Bat SARSr-CoV Rf4092	634 - GICASYHTASLL----RGVG - 649
Bat SARSr-CoV Rf/JL2012	636 - GICASYHTASLL----RSTG - 651
Bat SARSr-CoV JTM15	636 - GICASYHTASLL----RSTG - 651
Bat SARSr-CoV 16B0133	636 - GICASYHTASLL----RSTG - 651
Bat SARSr-CoV B15-21	636 - GICASYHTASLL----RSTG - 651
Bat SARSr-CoV YN2013	633 - GICASYHTASLL----RSIG - 648
Bat SARSr-CoV Anlong-103	633 - GICASYHTASLL----RSVG - 648
Bat SARSr-CoV Rp/Shaanxi2011	640 - GICASYHTASVL----RSTG - 655
Bat SARSr-CoV Rs/HuB2013	641 - GICASYHTASVL----RSTG - 656
Bat SARSr-CoV YNLF/34C	641 - GICASYHTASVL----RSTG - 656
Bat SARSr-CoV YNLF/31C	641 - GICASYHTASVL----RSTG - 656
Bat SARSr-CoV Rf1	641 - GICASYHTASHL----RSTG - 656
Bat SARSr-CoV 273	641 - GICASYHTASHL----RSTG - 656
Bat SARSr-CoV Rf/SX2013	639 - GICASYHTASLL----RSTG - 654
Bat SARSr-CoV Rf/HeB2013	641 - GICASYHTASLL----RSTG - 656
Bat SARSr-CoV Cp/Yunnan2011	641 - GICASYHTASLL----RSTG - 656
Bat SARSr-CoV Rs672	641 - GICASYHTASLL----RSVG - 656
Bat SARSr-CoV Rs4255	641 - GICASYHTASLL----RSVG - 656
Bat SARSr-CoV 4081	641 - GICASYHTASLL----RSVG - 656
Bat SARSr-CoV Rml	641 - GICASYHTASVL----RSTG - 656
Bat SARSr-CoV 279	641 - GICASYHTASVL----RSTG - 656
Bat SARSr-CoV Rs/GX2013	642 - GICASYHTASVL----RSTG - 657
Bat SARSr-CoV Rs806	641 - GICASYHTASLL----RSTG - 656
Bat SARSr-CoV HKU3-1	642 - GICASYHTASVL----RSTG - 657
Bat SARSr-CoV Longquan-140	642 - GICASYHTASVL----RSTG - 657
Bat SARSr-CoV Rp3	641 - GICASYHTASLL----RSVG - 656
Bat SARSr-CoV Rs4247	642 - GICASYHTASLL----RSVG - 657
Bat SARSr-CoV Rs4237	641 - GICASYHTASLL----RSVG - 656
Bat SARSr-CoV As6526	641 - GICASYHTASLL----RSVG - 656

<https://www.gov.uk/guidance/high-consequence-infectious-diseases-hcid>



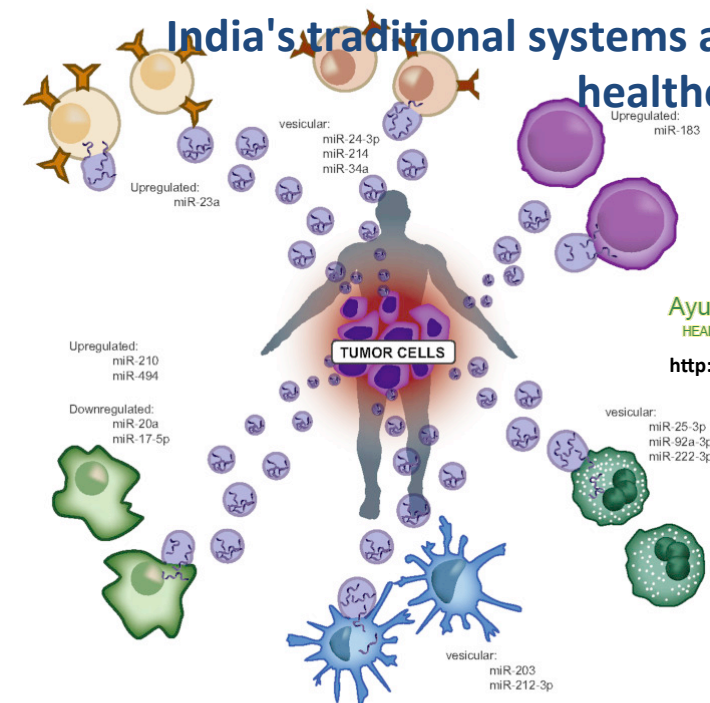
# Basic and Fundamental Research for Ayurveda-Modern Medicine Integration:

India's traditional systems and sciences of health and wellbeing informing future global healthcare systems, medical education and research and shaping a 'One Earth-One Health World Order'.

**CD 8<sup>+</sup> T-cells**  
decreased release of  
- IFN $\gamma$   
- IL-2  
- IL-17  
inhibition of  
- proliferation  
- differentiation

**CD 4<sup>+</sup> T-cells**  
decreased release of  
- IFN $\gamma$   
- IL-2  
- IL-17  
inhibition of  
- proliferation  
- differentiation

**Natural Killer Cells**  
reduced expression of  
- UCA-1  
- IL-12  
=> reduced tumor cytotoxicity



**Myeloid Derived Suppressor Cells**  
enhancement of  
- recruitment  
- suppressive function

**Dendritic Cells**  
reduced expression of  
TLR4  
TNF- $\alpha$   
IL-12  
RFXAP  
=> reduced MHC II expression  
=> induced immune tolerance

**Tumor-Associated Macrophages**  
increased release of IL-6  
=> tumor growth  
macrophage reprogramming  
immunosuppressive M2 polarization

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**Madan Thangavelu PhD**

*Ayush Valley Foundation, Kerala, INDIA*  
*TransDisciplinary University, Bangalore, INDIA*  
*European Ayurveda Association (EUAA), GERMANY*  
*All Party Parliamentary Group on Indian Traditional Sciences, UK*  
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*Medical University, Graz, AUSTRIA*

**madan@ayushvalley.org**

**+ 44 7830 300 728**

**<https://uk.linkedin.com/in/genomebiologist>**

**Friday 26 November 2021**

IT IS A TIME FOR A CHANGE  
HEALTH KNOWS NO BOUNDARIES

**MiRNAs: dynamic regulators of immune cell functions in inflammation and cancer**  
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