






## Chemical Education


### Inspiring Chemical Education

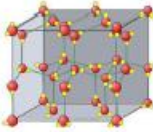
## Ice

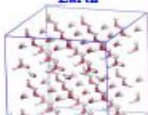
  
**Ice**


  
**Ice**


  
**Mars**

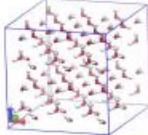
  
**Mars**

  
**Chemistry Teacher  
Nobel laureates  
Computer  
Internet**

  
**Earth**

  
**Ice**

  
**Moon**

  
**Earth**

### 3. Nobel prizes in Medicine/ Physiology (2000 to 2014)

**K. Somasekhara Rao<sup>1</sup>, K. Ramakrishna<sup>2</sup> and R. Sambasiva Rao<sup>3\*</sup>**




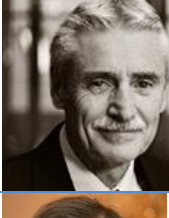



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Accepted on 10<sup>th</sup> March 2016







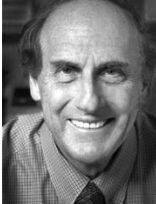
The Nobel Prizes in Medicine and physiology since 1901 were awarded to scientists for innovative results culminating to the benefit of mankind. The discoveries are in interdisciplinary knowledge pursuit and have no rigid borders study arenas. The fields of research of Noble Laureates in medicine are diverse ranging from chemistry, clinical practices, surgery (transplantation) to biology. The Noble prize won disciplines include cell/ocular/respiratory/cardiovascular/digestive/muscle/neuro physiology, nutrition, metabolism, endocrinology, genetics, hematology, immunity, radiology, diagnostic imaging techniques, reproductive medicine (in vitro fertilization), antibacterial agents and oncology. The medical disciplines viz. dermatology, audiology, embryology, epidemiology, ethology, gastroenterology, otolaryngology, neuroanatomy, spatial behavior also received this highest recognition. The basic science windows like zoology, biochemistry, molecular biology, developmental biology, virology, bacteriology, pharmacology, toxicology and parasitology also find a niche in these focussed investigations. [Table 1](#) summarizes the contribution, place of birth of the Nobel Laureates in Medicine and Physiology during the years 2000 to 2014.







Table 1: Nobel Laureates in Medicine and Physiology during 2000-2014



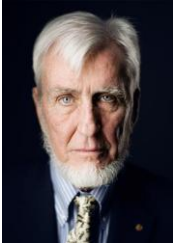




Year Of award	Contribution(s) in Medicine and Physiology	Sub fields	Nobel Laureate	Photo
2000	🌀 Signal transduction in nervous system	🌀 Neurophysiology	Arvid Carlsson	
		🌀 Neurophysiology	Paul Greengard	
		🌀 Neurophysiology	Eric R. Kandel	
2001	🌀 Key regulators of the cell cycle	🌀 Cell physiology 🌀 Molecular biology	Leland H. Hartwell	
		🌀 Cell physiology 🌀 Molecular biology	Tim Hunt	
		🌀 Cell physiology 🌀 Molecular biology	Sir Paul M. Nurse	
2002	🌀 Genetic regulation of organ development and programmed cell death	🌀 Genetics	Sydney Brenner	

Year Of award	Contribution(s) in Medicine and Physiology	Sub fields	Nobel Laureate	Photo
		<ul style="list-style-type: none"> <li>Genetics</li> </ul>	H. Robert Horvitz	
		<ul style="list-style-type: none"> <li>Genetics</li> </ul>	John E. Sulston	
2003	<ul style="list-style-type: none"> <li>Magnetic resonance imaging</li> </ul>	<ul style="list-style-type: none"> <li>Diagnostic imaging</li> </ul>	Paul C. Lauterbur	
		<ul style="list-style-type: none"> <li>Diagnostic imaging</li> </ul>	Sir Peter Mansfield	
2004	<ul style="list-style-type: none"> <li>Discoveries of odorant receptors and the organization of the olfactory system</li> </ul>	<ul style="list-style-type: none"> <li>Genetics</li> <li>Neurophysiology</li> </ul>	Richard Axel	
		<ul style="list-style-type: none"> <li>Genetics</li> <li>Neurophysiology</li> </ul>	Linda B. Buck	
2005	<ul style="list-style-type: none"> <li>Bacterium <i>Helicobacter pylori</i></li> <li>Its role in gastritis and peptic ulcer</li> </ul>	<ul style="list-style-type: none"> <li>Bacteriology</li> <li>Disease transmission</li> <li>Gastroenterology</li> </ul>	Barry J. Marshall	
		<ul style="list-style-type: none"> <li>Bacteriology</li> <li>disease transmission</li> <li>Gastroenterology</li> </ul>	J. Robin Warren	

Year Of award	Contribution(s) in Medicine and Physiology	Sub fields	Nobel Laureate	Photo
2006	<ul style="list-style-type: none"> <li>🌀 RNA interference</li> <li>🌀 Gene silencing by double-stranded RNA</li> </ul>	<ul style="list-style-type: none"> <li>🌀 Genetics</li> <li>🌀 Molecular biology</li> </ul>	Andrew Z. Fire	
		<ul style="list-style-type: none"> <li>🌀 Genetics</li> <li>🌀 Molecular biology</li> </ul>	Craig C. Mello	
2007	<ul style="list-style-type: none"> <li>🌀 Use of embryonic stem cells</li> <li>🌀 Specific gene modifications in mice by stem cells</li> </ul>	<ul style="list-style-type: none"> <li>🌀 Genetics</li> </ul>	Mario R. Capecchi	
		<ul style="list-style-type: none"> <li>🌀 Genetics</li> </ul>	Sir Martin J. Evans	
		<ul style="list-style-type: none"> <li>🌀 Genetics</li> </ul>	Oliver Smithies	
2008	<ul style="list-style-type: none"> <li>🌀 Human papilloma viruses → cervical cancer</li> </ul>	<ul style="list-style-type: none"> <li>🌀 Disease transmission</li> <li>🌀 Virology</li> <li>🌀 Medical oncology</li> </ul>	Harald zur Hausen	
		<ul style="list-style-type: none"> <li>🌀 Disease transmission</li> <li>🌀 Immunity</li> <li>🌀 virology</li> </ul>	Françoise Barré-Sinoussi	

Year Of award	Contribution(s) in Medicine and Physiology	Sub fields	Nobel Laureate	Photo
	☯ Human papilloma viruses → cervical cancer	<ul style="list-style-type: none"> <li>○ Disease transmission</li> <li>○ Immunity</li> <li>○ virology</li> </ul>	Luc Montagnier	
2009	☯ Telomeres and the enzyme telomerase protection of chromosomes	○ Genetics	Elizabeth H. Blackburn	
		○ Genetics	Carol W. Greider	
		○ Genetics	Jack W. Szostak	
2010	☯ Development of in vitro fertilization	○ Reproductive medicine	Robert G. Edwards Patley	
2011	☯ Activation of innate immunity	○ Immunity	Bruce A. Beutler	
		○ Immunity	Ralph M. Steinman	

Year Of award	Contribution(s) in Medicine and Physiology	Sub fields	Nobel Laureate	Photo
	<ul style="list-style-type: none"> <li>☞ Discovery of dendritic cell</li> <li>☞ Its role in adaptive immunity</li> </ul>	<ul style="list-style-type: none"> <li>☉ Immunity</li> </ul>	Jules A. Hoffmann	
2012	<ul style="list-style-type: none"> <li>☞ Mature cells can be reprogrammed to become pluripotent</li> </ul>	<ul style="list-style-type: none"> <li>☉ Genetics</li> </ul>	Sir John B. Gurdon	
		<ul style="list-style-type: none"> <li>☉ Genetics</li> </ul>	Shinya Yamanaka	
2013	<ul style="list-style-type: none"> <li>☞ Major transport system in our cells</li> <li>☞ Machinery regulating vesicle traffic</li> </ul>	<ul style="list-style-type: none"> <li>☉ Biochemistry</li> <li>☉ Cell physiology</li> </ul>	James E. Rothman	
		<ul style="list-style-type: none"> <li>☉ Cell physiology</li> <li>☉ Genetics</li> </ul>	Randy W. Schekman	
		<ul style="list-style-type: none"> <li>☉ Cell physiology</li> <li>☉ Neurophysiology</li> </ul>	Thomas C. Südhof Göttingen Germany	

Year Of award	Contribution(s) in Medicine and Physiology	Sub fields	Nobel Laureate	Photo
2014	 Discoveries of cells that constitute a positioning system in the brain	 Physiology spatial behavior	John O'Keefe	
		 Physiology spatial behavior	May-Britt Moser	
		 Physiology spatial behavior	Edvard I. Moser	

Affiliation at the time of award Noble Prize	Nobel Laureate	Country of birth	DOB	Share	Year of award
Göteborg University Gothenburg Sweden	Arvid Carlsson	Uppsala Sweden	25.01.1923	1/3	2000
Rockefeller University New York NY USA	Paul Greengard	New York NY USA	11.12.1925	1/3	2000
Vienna Austria	Eric R. Kandel	Vienna Austria	07.10.1929	1/3	2000
Fred Hutchinson Cancer Research Center Seattle WA USA	Leland H. Hartwell	USALos Angeles CA USA	30.10.1939	1/3	2001
Imperial Cancer Research Fund London United Kingdom	Tim Hunt UK	Neston United Kingdom	19.02.1943	1/3	2001
Imperial Cancer Research Fund London United Kingdom	Sir Paul M. Nurse UK	Norwich United Kingdom	25.01.1949	1/3	2001
The Molecular Sciences Institute Berkeley CA USA	Sydney Brenner South Africa	Germiston South Africa	13.01.1927	1/3	2002
Massachusetts Institute of Technology (MIT) Cambridge MA USA	H. Robert Horvitz USA	Chicago IL USA	8.5.1947	1/3	2002
The Wellcome Trust Sanger Institute Cambridge United Kingdom	John E. Sulston UK	Cambridge United Kingdom	27.3.1942	1/3	2002
University of Illinois Urbana IL USA	Paul C. Lauterbur USA	Sidney OH USA	6.5.1929	1/2	2003
University of	Sir Peter Mansfield	London United	9 -10-1933	1/2	2003

Affiliation at the time of award Noble Prize	Nobel Laureate	Country of birth	DOB	Share	Year of award
Nottingham School of Physics and Astronomy Nottingham United Kingdom	USA	Kingdom			
Columbia University New York NY USA	Richard Axel	New York NY USA	2 -7-1946	1/2	2004
Fred Hutchinson Cancer Research Center Seattle WA USA	Linda B. Buck	Seattle WA USA	29-01-1947	1/2	2004
NHMRC Helicobacter pylori Research Laboratory QEII Medical Centre Nedlands Australia University of Western Australia Perth Australia	Barry J. Marshall Australia	Kalgoorlie Australia	30.09.1951	1/2	2005
	J. Robin Warren	Adelaide, Australia	11.06.1937	1/2	2005
Stanford University School of Medicine Stanford CA USA	Andrew Z. Fire USA	Stanford, CA, USA	27.04.1959	1/2	2006
University of Massachusetts Medical School Worcester MA USA	Craig C. Mello USA	New Haven CT, USA	19.10.1960	1/2	2006
University of Utah Salt Lake City UT USA Howard Hughes Medical Institute	Mario R. Capecchi Italy	Verona Italy	6.10.1937	1/3	2007
Cardiff University Cardiff United Kingdom	Sir Martin J. Evans UK	Stroud United Kingdom	1.1.1947	1/3	2007
University of North Carolina Chapel Hill NC USA	Oliver Smithies UK	Halifax United Kingdom	23.6.1925	1/3	2007
German Cancer Research Center Heidelberg Germany	Harald zur Hausen Germany	Gelsenkirchen Germany	11.3.1936	1/2	2008
Regulation of Retroviral Infections Unit Virology Department Institut Pasteur Paris France	Françoise Barré- Sinoussi France	Paris France	30.7.1947	1/4	2008
World Foundation for AIDS Research and Prevention Paris France	Luc Montagnier France	Chabris France	18.8.1932	1/4	2008
University of California San Francisco CA USA	Elizabeth H. Blackburn	Hobart Tasmania Australia	26.10.1948	1/3	2009
Johns Hopkins	Carol W. Greider	San Diego CA USA	15.4.1961	1/3	2009



Affiliation at the time of award Noble Prize	Nobel Laureate	Country of birth	DOB	Share	Year of award
University School of Medicine Baltimore MD USA					
Harvard Medical School Boston MA USA Massachusetts General Hospital Boston MA USA Howard Hughes Medical Institute	Jack W. Szostak	London United Kingdom	9.10.1952	1/3	2009
University of Cambridge Cambridge United Kingdom	Robert G. Edwards Batley	United Kingdom	27.09.1925	1/1	2010
University of Texas Southwestern Medical Center at Dallas Dallas TX USA The Scripps Research Institute La Jolla CA USA	Bruce A. Beutler	Chicago IL USA	29.12.1957	1/4	2011
Rockefeller University New York NY USA	Ralph M. Steinman	Montreal Canada	14.1.1943	1/2	2011
University of Strasbourg Strasbourg France	Jules A. Hoffmann	Echternach Luxembourg	2.8.1941	1/4	2011
Gurdon Institute Cambridge United Kingdom	Sir John B. Gurdon	Dippenhall UK	2.10.1933	1/2	2012
Kyoto University Kyoto Japan Gladstone Institutes San Francisco CA USA	Shinya Yamanaka	Osaka Japan	4.9.1962	1/2	2012
Yale University New Haven CT USA	James E. Rothman	Haverhill MA USA	3.11.1950	1/3	2013
University of California Berkeley CA USA Howard Hughes Medical Institute	Randy W. Schekman	St. Paul MN USA	30.12.1948	1/3	2013
Stanford University Stanford CA USA Howard Hughes Medical Institute	Thomas C. Südhof Göttingen Germany	Germany	22.12.1955	1/3	2013
University College London United Kingdom	John O'Keefe	USA	18.11.1939	1/2	2014
Norwegian University of Science and Technology (NTNU) Trondheim Norway	May-Britt Moser	Norway	4.1.1963	1/4	2014
Norwegian University of Science and Technology (NTNU) Trondheim Norway	Edvard I. Moser	Norway	27.4.1962	1/4	2014

Information Source:  
<http://www.nobelprize.org/>