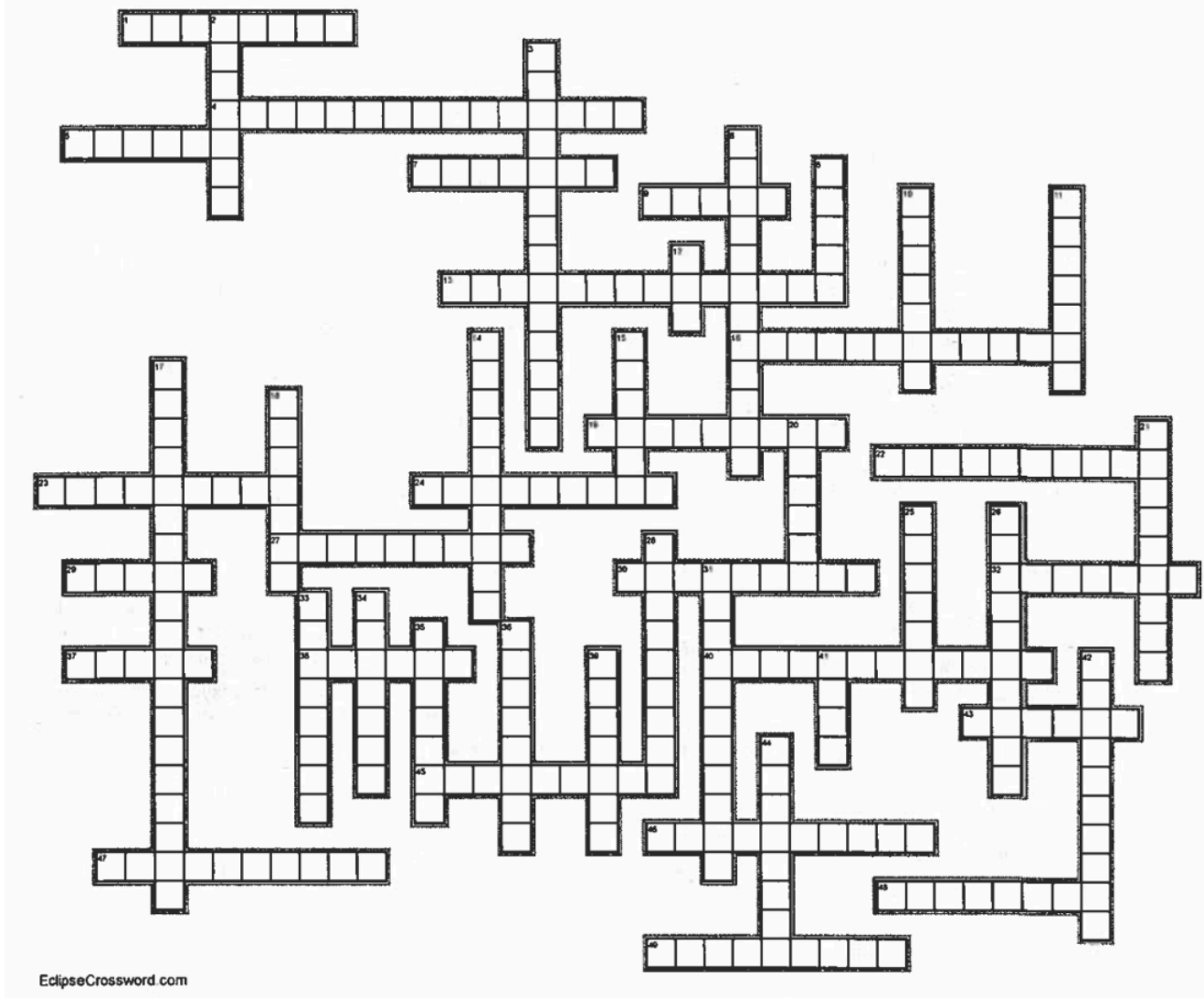


# Nobel Laureate Crossword Puzzle 1991 – 2000

## Nobel Prizes in the 1990's

Dr. Tom Manning



### Across

1. Diamond, \_\_\_\_\_ and fullerenes are the three allotropes of carbon.
4. The 1990 Nobel Prize in Physiology or Medicine was given to Dr. Joseph Murray and Dr. E. Donnall Thomas for successful research "discoveries concerning organ and cell \_\_\_\_\_ in the treatment of human disease" (from Nobelprize.org).
5. During the 1990's there was a highly competitive race to map the Human \_\_\_\_\_.
7. CFC's or Chlorofluoro\_\_\_\_\_ are molecules that were released into the atmosphere, also interfering with the oxygen-ozone cycle. This caused ozone to degrade and subsequently not block UV light.
9. NMR spectroscopy involves a \_\_\_\_\_ wave that is absorbed by the nucleus.

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13. \_\_\_\_\_ uses the pump-probe approach to study a reaction. The laser that pumps starts the chemical reaction, while the laser that probes measures a remarkably short snippet of the reaction.
16. "Two-thirds of \_\_\_\_\_ drugs approved by the FDA between 1989 and 2000 were either modified versions of existing treatments or "copycats of drugs already on the market," rather than innovative medications, according to a study released May 28, USA Today reports (Appleby, USA Today, 5/29)." Press release from KFF Health News.
19. Fullerenes, along with diamond and graphite are an \_\_\_\_\_ of carbon.
22. In the early 1990's, \_\_\_\_\_ fell apart as a country and Serbia, Macedonia, Slovenia, Croatia and Bosnia/Herzegovina formed. In addition, Montenegro and Kosovo lobbied for their independence.
23. The most common form of fullerenes is C60, a \_\_\_\_\_ allotrope of carbon.
24. The collapse of the Soviet Union (USSR) took place from 1989 to 1992. A prelude to that major event was a speech by President Ronald Reagan with the famous quote "Mr. \_\_\_\_\_, tear down this wall." (refers to the Berlin Wall separating East and West Germany).
27. Dr. Paul Boyer and Dr. John Walker won the 1997 Nobel Prize in chemistry for their research centered on understanding the natural enzyme based synthesis of \_\_\_\_\_ triphosphate (ATP)
29. Dr. John \_\_\_\_\_ won 1/2 of the 1998 Nobel Prize in chemistry for his research in quantum chemistry.
30. In 1992 the Dry Tortugas National Park, Florida (called Fort \_\_\_\_\_ National Monument) was formed. The Dry Tortugas are 70 miles from Key West.
32. \_\_\_\_\_ was the top-grossing movie of the 1990s. It is also the 4th top-grossing movie of all time.
37. "On March 2, 1995, physicists at Fermilab announced the discovery of a subatomic particle called the top \_\_\_\_\_. It was the last undiscovered particle of the six-member \_\_\_\_\_ family predicted by the Standard Model of particle physics." (from Fermi Lab press release)
38. The 1990's had some influential technologies introduced including the World Wide Web (www), text messaging, Sony Playstation and \_\_\_\_\_.
40. Dr. Jens Skou was one of three scientists that shared the 1997 Nobel Prize in chemistry for his work with ion-\_\_\_\_\_ enzyme, Na<sup>+</sup>, K<sup>+</sup>, -ATPase.
43. The \_\_\_\_\_ Space Telescope was launched in 1990, over 30 years ago.

### Down

2. A prion is a misfolded \_\_\_\_\_ that can cause mistakes in folding (geometry/shape) of other proteins resulting in cell death.
3. Dr. Corey developed \_\_\_\_\_. The chemist starts with the molecule they want to synthesize and works backwards. They break bonds in a model of the final structures and work backwards until they find structures that are readily available.
6. The first novel in the ultrapopular Harry Potter series, called Harry Potter and the \_\_\_\_\_ Stone, was released in 1997.
8. \_\_\_\_\_ balls were named after Richard Buckminster Fuller who was an American architect that designed geodesic domes.
10. The \_\_\_\_\_ Earthquake Disaster took place in Japan in 1995. It killed over 5,000 people caused in excess of \$100 billion in damages.
11. \_\_\_\_\_, graphite, and buckyballs are allotropes. Oxygen (O<sub>2</sub>) and ozone (O<sub>3</sub>) are also allotropes.
12. In March 2003, the United States military invaded Iraq in order to destroy Iraqi weapons of mass destruction (\_\_\_\_). They also intended (and did) remove Saddam Hussein.
14. Robert Curl, Sir Harold Kroto and Richard Smalley won the 1996 Nobel Prize for the discovery of \_\_\_\_\_.

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15. C60 has \_\_\_\_\_ five membered rings in its structure.
17. The London Protocols on ozone (O<sub>3</sub>) involved over 90 countries. It upgraded the 1980's Montreal Protocols. It required the phase out of CFC's or \_\_\_\_\_. CFC's interfere with the ozone cycle in the stratosphere, decreasing the lifetime of ozone molecules, allowing more UV to strike the earth's surface.
18. Nuclear magnetic resonance (NMR) spectroscopy only works with nuclei that have a \_\_\_\_\_ spin greater than zero.
20. Dr. Stanley Prusiner won the 1977 Nobel Prize in Medicine for the discovery of \_\_\_\_\_.
21. The International Campaign to Ban \_\_\_\_\_(ICBL) won the 1997 Nobel Peace Prize.
25. The 1999 Nobel Peace Prize was awarded to Doctors Without \_\_\_\_\_. They provide emergency medical aid around the world including warzones and infectious disease zones.
26. In 1993 a crew of \_\_\_\_\_conducted repairs on the Hubble Space telescope (while in orbit) to restore its ability to function.
28. When an atom or a molecule gains an electron it is a \_\_\_\_\_ reaction. GER stands for Gains Electron \_\_\_\_\_.
31. Dr. Ahmed Zewail won the 1999 Nobel Prize in chemistry for his work with transition states of chemical reactions and developed \_\_\_\_\_ spectroscopy.
33. \_\_\_\_\_, is a single sheet of graphite. It is one atom thick.
34. The \_\_\_\_\_ genocide occurred in 1994 and up to one million people were killed in the African nation.
35. Toni Morrison, whose published works included Song of \_\_\_\_\_, Jaz, and Beloved, about black American life, won the 1993 Nobel Prize for Literature.
36. <https://science.nasa.gov/mission/hubble/multimedia/what-did-hubble-see-on-your-birthday/>  
This web site allows you to see what the Hubble space telescope observed on your \_\_\_\_\_. (try it!)
39. \_\_\_\_\_ functional theory is a statistical based method used to study many-body systems that involve molecules that are interacting.
41. Dr. Kary Banks Mullis, the Nobel Laureate for PCR, also drew some media attention because he liked to \_\_\_\_\_ and played the guitar.
42. PCR (\_\_\_\_\_ Chain Reaction) is a technique used to generate a large number of copies (billions) of copies of DNA.
44. The Nobel Prize in Physics 1995 was awarded "for pioneering experimental contributions to lepton physics" jointly with one half to Martin L. Perl "for the discovery of the tau lepton" and with one half to Frederick Reines "for the detection of the \_\_\_\_\_" from "<https://www.nobelprize.org/>"