

KNOCKOUT STORY

There has been a wonderful piece of basic research from India. Scientists from the Centre for Cellular and Molecular Biology, Hyderabad have serendipitously found that knocking out a particular gene- WDR13, in mice results in increased insulin production and improved glucose tolerance. People are excited because this means that if we have a drug which will interfere with this protein we have a potential remedy for diabetes. How did they create a knockout mouse. They took embryonic stem cells of mice and replaced the WDR13 gene. These cell clones were injected into blastocysts. Male chimeras (mice having cells with 2 types of genetic content) were created. These were bred with female mice. Offspring with the absent WDR 13 gene were identified and followed over time. They found very interesting results. These mice with no functional WDR13 gene developed mild obesity over time and yet had better glucose clearance. By 1 year the mutant mice had 2.13 times higher levels of insulin compared to normal mice. When they looked at the pancreatic tissue they found that there was 2 fold beta cell proliferation with significantly higher islet cell mass (*The Hindu 21 June 2012*).

OBAMACARE WINS

Four years ago, the key ideological point of heated debate in the US presidential elections was health care reforms. Even in office, Obama's attempt to reform the US health system has consistently met with severe backlash from conservative Republicans. He can now take a small breath of relief. The United States Supreme Court has just endorsed this historic bill in an exciting cliffhanger described as a watershed moment in US constitutional history. "Obamacare" as it is nicknamed attempts to provide health protection to millions of uninsured Americans. The Patient Protection and Affordable Care Act (PPACA) requires adults not covered by employer- or government-sponsored insurance plans to maintain minimal essential health insurance coverage or pay a penalty, a provision commonly referred to as the *individual mandate*. By compelling the young and healthy into the insurance market, it aims to reduce premiums for all and subsidize coverage for the poorest. It bans insurance firms from turning away new customers who have existing health problems. Major sources of revenue will include a much-broadened *Medicare tax* on higher incomes, an annual fee on insurance providers, and a 40% *excise tax* on certain insurance policies. There are also taxes on pharmaceuticals and high-cost

diagnostic equipment. It also puts a cap on the expenditure by insurance companies on administrative costs. It is interesting to note that health reforms were a central issue in American politics, in sharp contrast to India where healthcare doesn't seem to rouse any public passion (*The Hindu 30 June 2012*).

THERADIAGNOSTICS

Trail blazing innovation from Hyderabad born scientist in the US has made headlines around the world. Rao Papineni is chief scientist and senior principal investigator in medical applications of nanotechnology at Carestream Health, Inc USA. What he and his team have created is an amazing nanoparticle. The problem in oncology has always been an accurate identification of the actual tumor borders. The second deep problem is to deliver therapy to the tumor cell while sparing normal tissue. Studies have shown that there are significant differences in tumor volumes between anatomically based technologies (*e.g.* CT and MRI) and molecular based technologies like PET and SPECT. What Rao's amazing nanoparticle does is 'theradiagnostics' – *i.e.*, it is capable of both diagnosis and therapy. It comprises a biocompatible nanoparticle which is combined to a linear polymer with multiple binding sites. To these sites can be attached a fluorescent dye which can accurately delineate tumor extent and other sites to which si RNA's can attach. Si RNAs are 'small interfering' RNA which can enter a cell to block the functioning of certain genes. They have been used as antivirals and now being tried as a way to silence oncogenes (*The Hindu 27 June 2012*).

NURSES VS DOCTORS

The Medical and Health Department of Rajasthan has recently sent a proposal to the Medical Council of India to authorize nurses to independently handle primary treatment of patients including prescribing drugs. They have received approval from the Indian Nursing Council. At this point in time this is illegal but unavoidable in many circumstances. Rajendra Rana, President of the Rajasthan Nursing Association feels it is a positive move since it will empower nurses and protect them from the law. The proposal aims to allow nurses to prescribe primary medication in emergency situations (*The Times of India 5 July, 2012*)

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