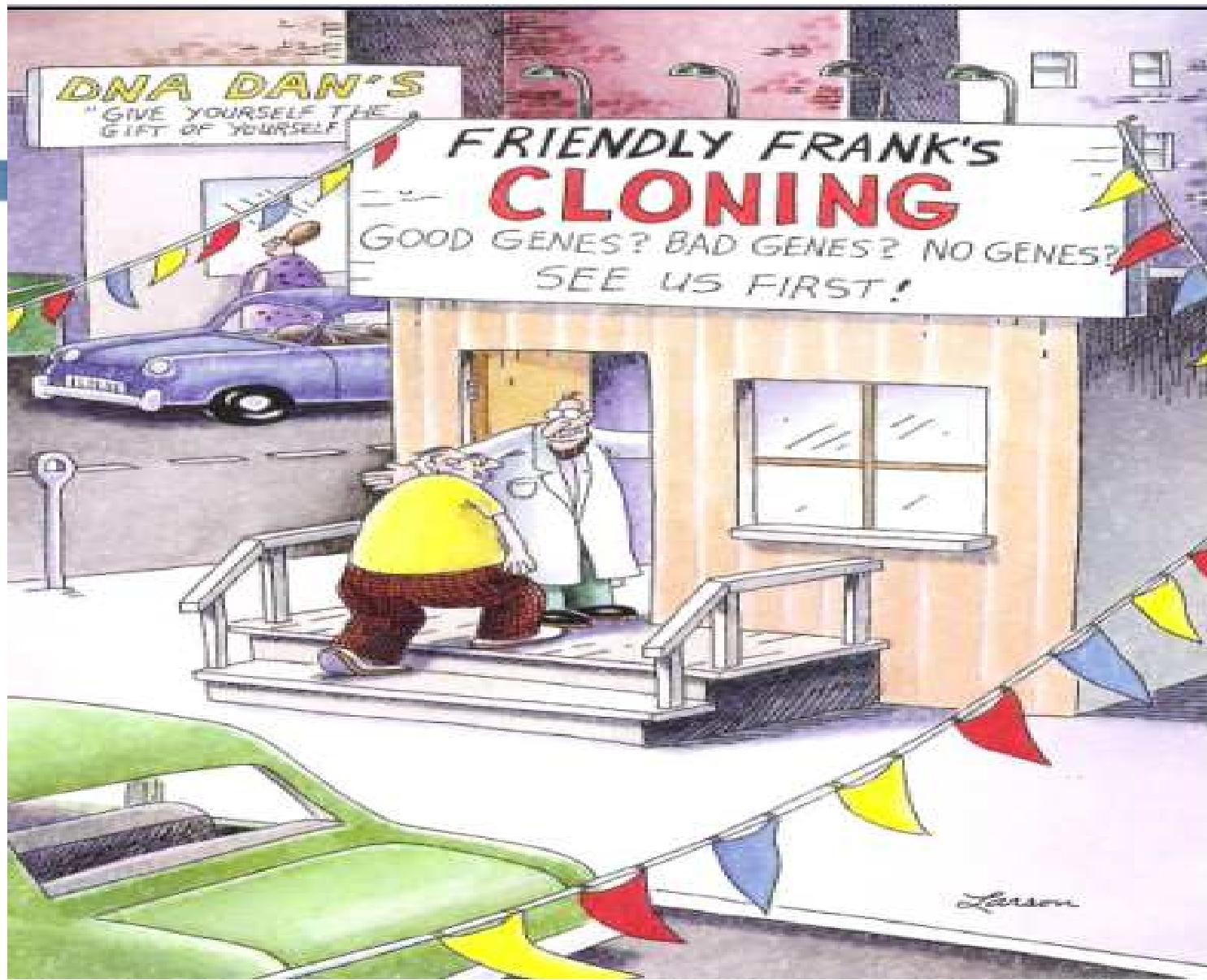


NAS/OECD/Royal Society Symposium on Synthetic Biology

The Challenges to Synthetic Biology Development: -- A Little to Overcome

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Public Perceptions and Public Pressures

- Recent clips tell the story –

“Scientists find bugs that eat waste and excrete petrol”, www.timesonline.co.uk, June 14, 2008.

“Big questions on tiny, tiny technology” *The Boston Globe*, August 9, 2008.

“Army Slows Bioresearch At Maryland Laboratory” *The New York Times*, February 10, 2009.

“Harvard fuels quest to create life from scratch”, *The Boston Globe*, March, 18, 2009.

“...There is a game-changing scientific development that transcends all in human history. It is already underway and it even has a name: synthetic biology...”, Dimitar Sasselov, Edge World Question Center, 2009.

“Does Synthetic Biology Need Synthesized Ethics”, The Hastings Center, June 24, 2009.

“Synthetic Biology: Gene Therapy Gets Under The Skin”, Science Daily, June 29, 2009.

Public Perceptions and Public Pressures



- The Woodrow Wilson summary
- Creating Life?
- Bio security – a real threat?

The Patent Thicket: An Anti-Common Problem?

- Where Are We: Bioregisters and core patents
- Some Important Recent Patents
 - US Patent 6,774,222 “Molecular Computing Elements, Cakes and Flip Flops” (2004) (Schneider et al.)
 - US Patent Application 2007 264688 “Synthetic Genomics (2007) (Venter et al.) (Note: Earlier synbio application filed October 12, 2005)
 - US Patent Application 2007 0269862 “Installations of Genomics or Partial Genomics into cells or Cell-Like Systems (2007) (Glass et al.)
- Is a real joint effort viable?
- Key patents - untested

The Lack of Regulation



- A boon or an inviting target?
- Regulation as something else – pollution, pesticide, contaminant, nanotechnology?
- Regulation and protection – Why not use the proposed amended NIH guidelines as a base to move forward?

NIH Guidelines for Research Involving Recombinant and Synthetic Nucleic Acid Molecules



- Published March 4, 2009
- A taxonomy of risk
- Addresses the research phase

What about scale up, distribution and sale?



- Are existing approaches sufficient?
 - Concerns about too much regulation in too many places (City of Berkeley nanotechnology registration as a model)
 - Concerns about patchwork regulation (The Stem Cell analogy)
 - How to address the need for international harmonization?

Insurance



- Will there be a synbio exclusion?
- The present insurance approaches appear adequate
- An inter-insurance exchange or governmental intervention seems unnecessary.

The Solution



- Public-private partnership?
 - Best practices on screening, watch lists, hotlines, ethical guidance, a clearinghouse (Stephen Maurer, et. Al., Goldman School of Public Policy)
 - Code of Conduct Project and Technical Solutions For Biosecurity In Synthetic Biology (IASB)
- An industry voice
 - SBIA
 - Who will convene the solution?