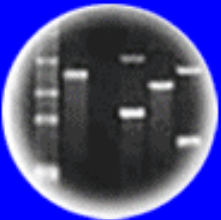


DNA
Genetic Code of Life



Entire Genetic Code
of a Bacteria



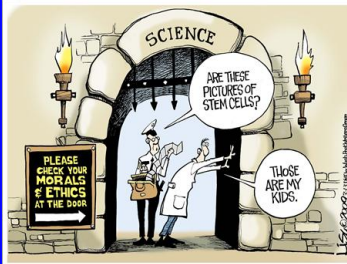
DNA Fingerprinting



Cloning: Ethical Issues
and Future Consequences



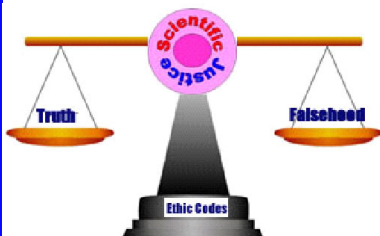
Plants of Tomorrow



HC70AL Summer 2014 Gene Discovery Laboratory

Ethics in Scientific Research

8/25/14



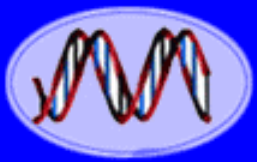
**WRONG IS
WRONG**
even if everyone is doing it.
**RIGHT IS
RIGHT**
even if no one is doing it.

**ETHICS
ELHIC?**

Author of 'game-changing' stem cell papers accused of fraud



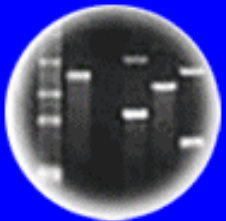
STAP stem cell co-author commits suicide



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3 CATEGORIES OF SCIENTIFIC MISCONDUCT:



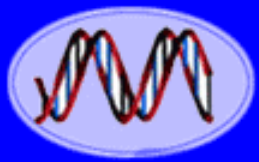
Fabrication
Making up data.



Falsification
Distorting data.



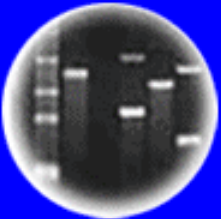
**Questionable
Research Practices:**
Cooking data, mining
data, concealing con-
flicts of interest.



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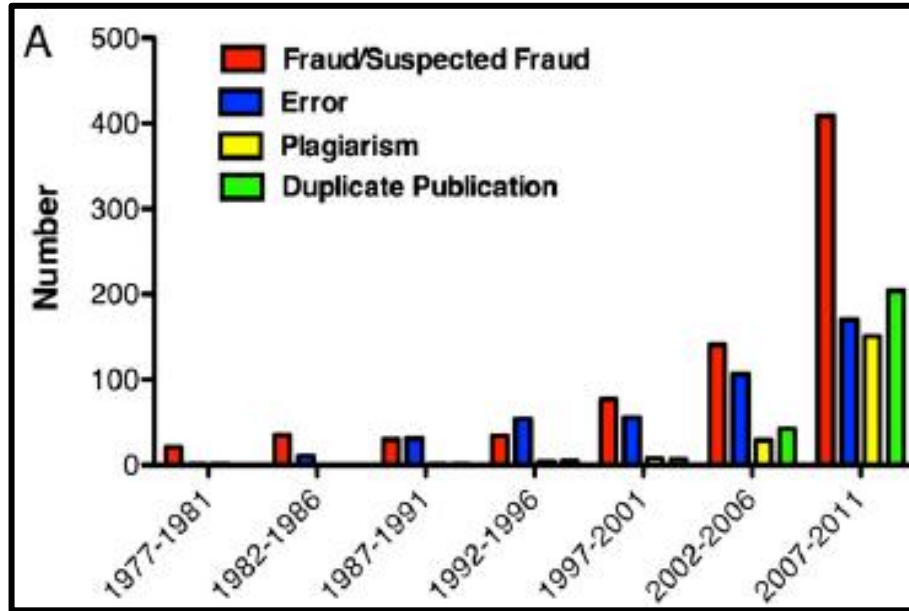
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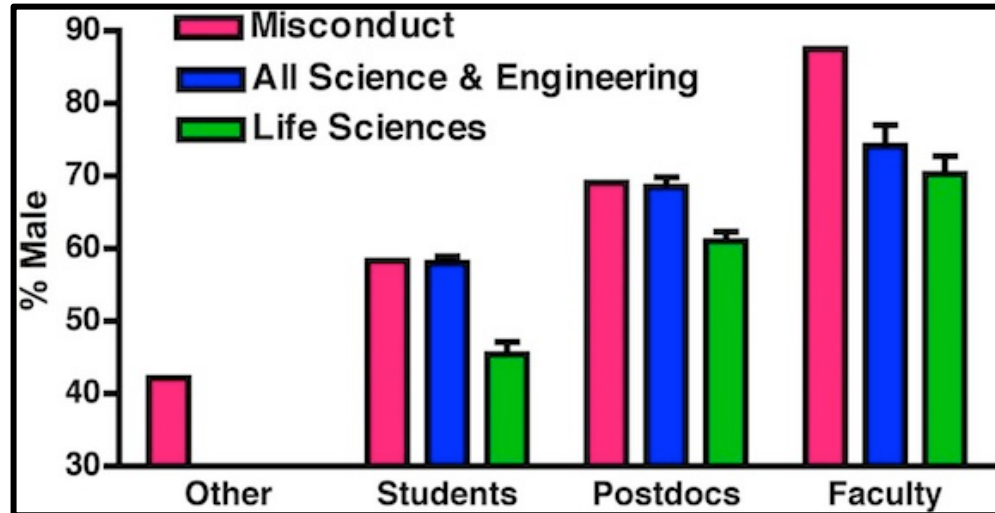
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Scientific Fraud Increasing & Mostly Done By Males

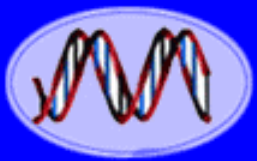
Studies By Fang et al.



PNAS, 17028-17033 (2013)



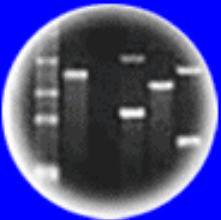
mBio, e00640 (2012)



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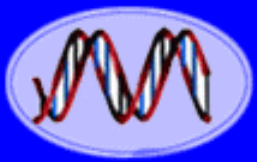


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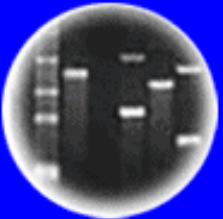
Science	Pseudoscience
Willingness to change with new evidence	Fixed ideas
Ruthless peer review	No peer review
Takes account of all new discoveries	Selects only favourable discoveries
Invites criticism	Sees criticism as conspiracy
Verifiable results	Non-repeatable results
Limits claims of usefulness	Claims of widespread usefulness
Accurate measurement	"Ball-park" measurement



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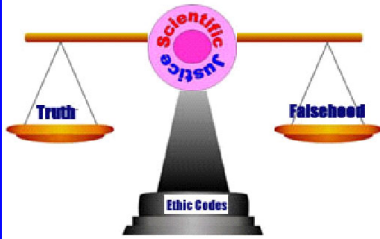
DNA Fingerprinting



Cloning: Ethical Issues
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Ethics Case Presenters & Discussion Leaders

Will – Cases 4.9 & 7.3

Jazmin – Cases 2.8 & 4.7

Wing – Case 3.5

Nora – Case 5.1

Dominic – 11.6 & Case 11.4