

Nanotechnology IP Licensing: Think Big, But Keep Your Feet on the Ground!

*LES 2004 Winter Meeting:
Workshop 3*

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Topics

- The PTO's handling of nanotechnology
 - The disruptive nature of nanotechnology
 - The pervasive nature of nanotechnology
- NT Licensing observations



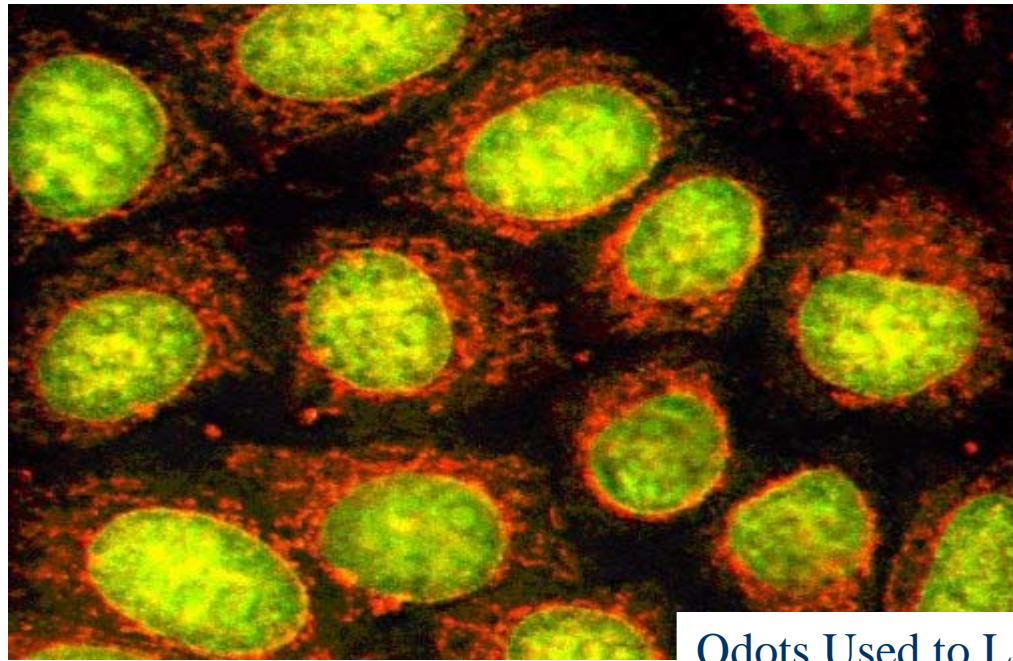
The PTO's Handling of NT

- 21st Century Nanotechnology R&D Act
 - \$3.7 billion for nanotechnology R&D for FY 2005-2008
 - FY 2005 PTO slated to keep filing fees, increased budget
- USPTO Nanotechnology Customer Partnership
 - About 1500 nano-related patents issued through fall 2003
 - Examiner education
 - No new tech centres or classification planned – will revisit
 - Classes involved: 57(textiles derived from fullerenes), 106(paint with nanoparticles that change colors), 204/422/435 (chemistry: electrical and wave energy/ apparatus/ molecular biology and microbiology), 257(semiconductors), 423 (fullerenes), 428(magnetic nanoparticles, construction materials), 438 (molecular engines and computers), etc.

Nanotech Is Disruptive

- New inventions
 - Quantum dots having characteristic spectral emissions (nano-barcodes)
 - Gold nanoparticles studded with DNA for genetic-sequence testing
 - Nanospheres – exposing nanoparticles to infrared radiation for localized heating

Quantum Dots



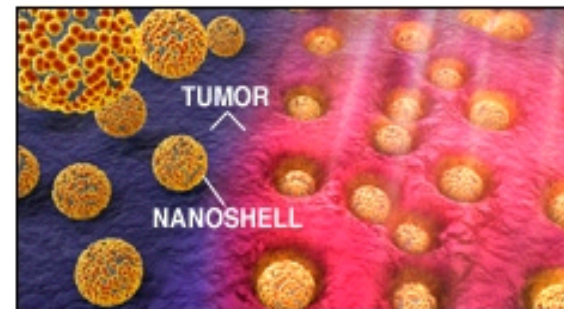
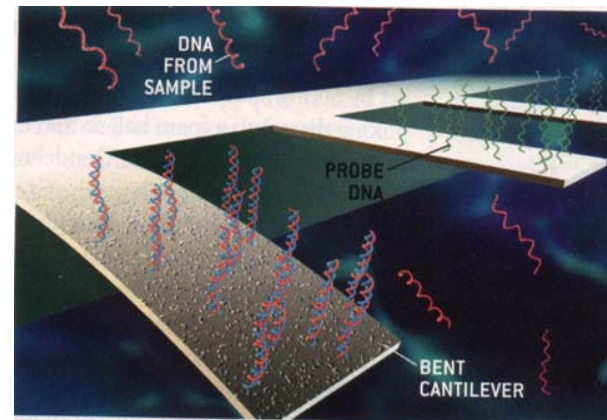
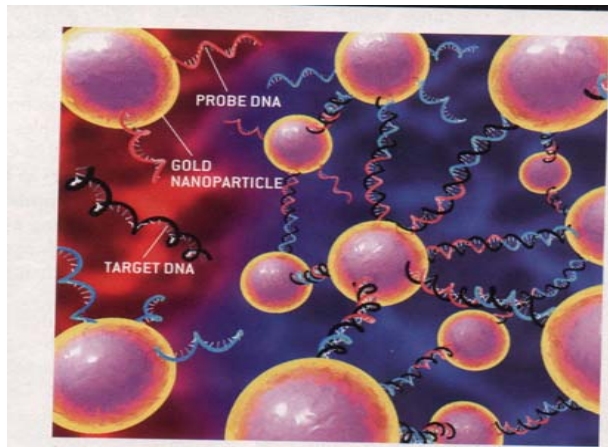
Qdots Used to Label Human Mitochondria Cells

Perspective

The Science is Real. And, products are hitting the market.

NEMS & Life Sciences

Detectors
Drug delivery
Lab-on-a-chip, etc.



Protection Challenges

- From Partnership Meeting, PTO to focus on:
 - Enablement
 - Inherency
 - Predictability or lack thereof
 - Presence or absence of working example
 - Breadth of claims
 - Quantity of experimentation needed
- Standard examination guidelines will apply
 - One patent law for all technologies
 - Patentability usually hinges on discovery or improvement of a new functionality of device/manufacture/material

Licensing Considerations

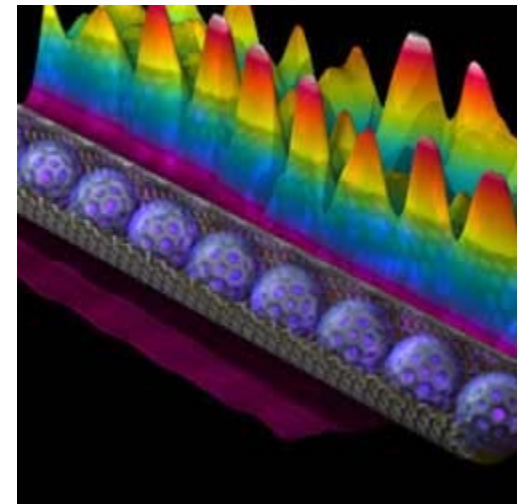
- Displacement of existing technologies by creation of
 - New product lines
 - In new fields of use
- Patent life verses commercialization horizon
 - No real solution
- Draft to implement/mirror the business plan

Nanotechnology Is Pervasive

- Nano is not an industry *per se*
- Nano technology is pervasive, a confluence of science disciplines
- Same issues that plagued biotech likely to impact nanotech
 - Quick to emerge, timeline uncertain
 - Potential FDA approval
 - Need good environmental profile
- Like chemical/electrical/mechanical hybrid technology
 - More likely an enabling and complementary technology

Pervasive Examples

- Security
e.g., molecular level barcoding, chemical detection, sensors
- Electronics
e.g., LCDs, Semiconductors, Memory
- Materials
e.g., powders, polymers, gecko-feet
- Energy
e.g., solar cells, fuel cells, membranes
- Nano Tools
e.g., STMs, AFMs



Perspective

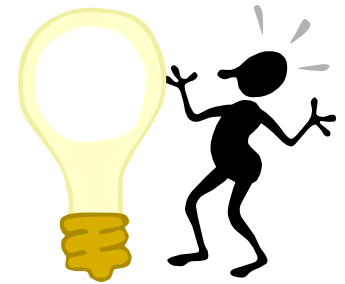
The wide range of applications is one force driving the excitement surrounding nano.

Protection Challenges

- Does size matter?
 - Surface effects
 - Quantum and Van der Waals' forces
- Usual players: Utility, novelty, unobviousness, unexpected results
- Law of relative dimensions
 - Not patentable absent different functionality or change in property

What May Be Protectable

- New nano scale devices and materials
 1. New methods of manufacturing
 2. New nano-enabled functionality and methods of use
 3. Improvements of devices, materials and methods
 4. Integration of new or improved nano materials into micro or macro systems



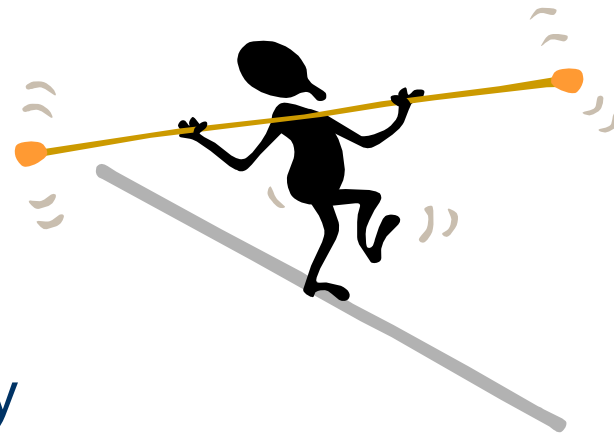
What's Less Protectable

- Higher levels of integration, minimization
- Higher performance
- Lower cost through mass production



Licensing Considerations

- Bench-top fabrication - does small translate into:
 - Reduced capital investment?
 - Less development time?
 - Less expensive?
 - Easy to copy?
- Know-how more portable
 - IP remaining barrier to entry



NT Licensing Observations

- Research Funding Sources Impose Encumbrances
- License Income structures
- Performance requirements



Research Funding Sources Impose Encumbrances

- Statutes, regulations or contracts (policies) affect how IP is protected, used and transferred
 - Government
 - Academic institutions
 - Foundations
 - Industry
 - Venture capital
- Know these encumbrances and understand their impact on your IP strategy
 - Ownership - use “due diligence”

Ownership

- Bayh-Dole Issues
 - Often affect ownership and exclusivity expectations
 - Almost all have IP ownership clauses that defer to university IP Policies, which may trump
 - Transfer of IP to company needs sponsor's approval
- Jointly developed IP – Who will own it?
 - May lose 35 USC § 103(c) protection

License Income Structures

- Minimum annual royalty/maintenance fees
 - Deductible from running royalties
 - Timing to market may be critical
- Milestone Fees following IPO's
 - Timing to market may be critical



License Income Structures (cont'd)

- Equity investment
 - Grants of common stock
 - Participation in private equity offerings
- Combinational products – fractional royalty calculus
- Wide range of sublicensing royalty percentages back to L'or
- Royalty break on L'ee sales to US Government

Performance Requirements Key

- Funding
 - R&D related to licensed IP
 - Patent prosecution – limited or world wide?
- Reporting
 - R&D plans covering major tasks
 - Periodic progress reports
- Timetables to
 - Develop working models or meet specific technical milestones
 - Make first commercial sale
 - Enter letter of intent - other contract(s) for commercialization
- Meet annual new sales goals

Questions?



Who is SKGF?

- Intellectual property firm located in Washington DC
- Specializing in the creation, protection and transfer of IP
- Create and protect IP portfolios for many start-ups and small companies in an early stage of their development
- Representing companies and universities, domestic focus

Who is SKGF? (cont'd)

- Evaluate IP portfolios for clients who acquire or underwrite such early stage entities
- Provide IP-related advice for clients seeking partnerships or collaborations with other entities (e.g., tech transfer)
- Provide high value counseling, legal opinions, and licensing allowing our clients to proceed into potentially riskier and more profitable areas of business.

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