AAAS | HBCU Making and Innovation

The Ins and Outs of Technology Transfer at HBCUs

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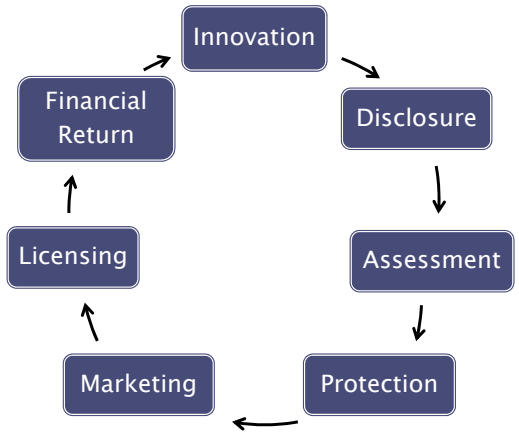
Where are we going today?

- Technology Transfer of Intellectual Property
- What is Intellectual Property?
  - How can it be protected?
- More about patents
  - How do universities get them?
- What do universities do with IP?
- How can I help the Tech Transfer Office?
- What if I don't have a Tech Transfer Office?
- Q&A

What is Technology Transfer?



What is Intellectual Property?

Intellectual Property (IP)= creation of the mind

- inventions
- literary and artistic works
- symbols, names, images, and designs

WHY can you protect IP?

United States Constitution, Article 1, Section 8:

Allows Congress to "promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

HOW can you protect IP?

© TM

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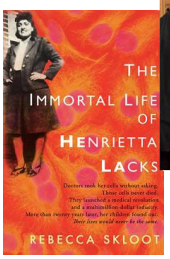
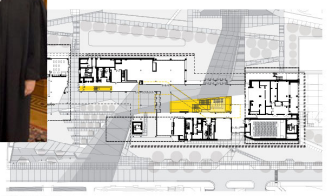
Copyright ©

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<script type="text/javascript" src="videoplayer.js"></script>
<script type="text/javascript">
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    var origtitle = "Did you know kids are learning about computer coding?";
    var origurl = publishedDate+"_computercode_hi.mp4";
    videoplayer.smooth = true;
    videoplayer.wmode = "opaque";
    videoplayer.embedPlayer('vplayer',origurl,null,origtitle,false);

    //to handle the title overlay.
    videoplayer.onStateChange = function(vplayer,state){
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        $("#kiosk hl").fadeOut();
    } else if (state=="STOPPED_STATE" || state=="PAUSE_STATE") {
        $("#kiosk hl").fadeIn();
    }
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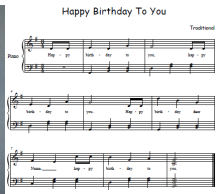
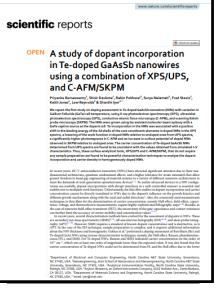




Who owns the copyright?

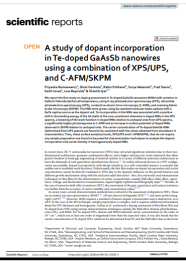
created by faculty "on your own"

- Not in scope of employment ('directed work')
- No Substantial Use of University resources

created by student "on your own"

Bound by the terms of agreement

- 'Work for hire' = **employer-owned**
- If not explicit, then = **creator-owned**



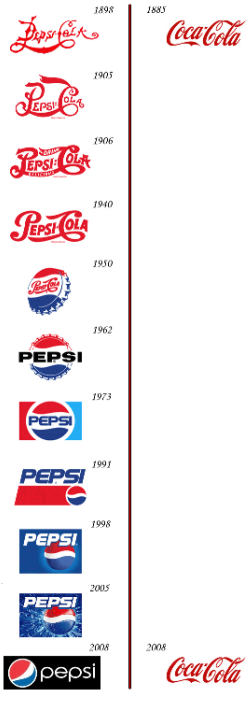
scientific reports

OPEN A study of dopant incorporation in Te-doped GaAsSb nanowires using a combination of XPS/UPS, and C-AFM/SKPM

Copyright can be assigned

Trademarks

word, phrase, symbol, or design
source of goods <u>in the marketplace</u>



What is a trade secret?

Information having economic value from NOT being publicly known

- formula, pattern, compilation, device, method, technique, recipe, customer list, process

Google

How valuable is a trade secret?

- Can last forever
  - No requirement to share
- Only valuable to the extent it is kept secret

Is a trade secret consistent with a university mission?

What is a Patent?

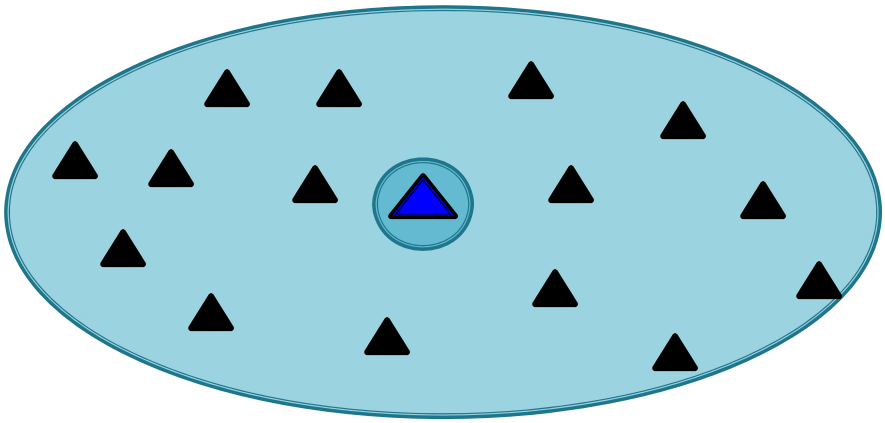
A contract between the patent holder and the government

- inventor provides a detailed disclosure of the "invention"
- Patent holder receives ~20 years to exclude others from
  - making
  - using
  - offering for sale
  - selling
  - importing

  the claimed invention
- US patent rights stop at US border

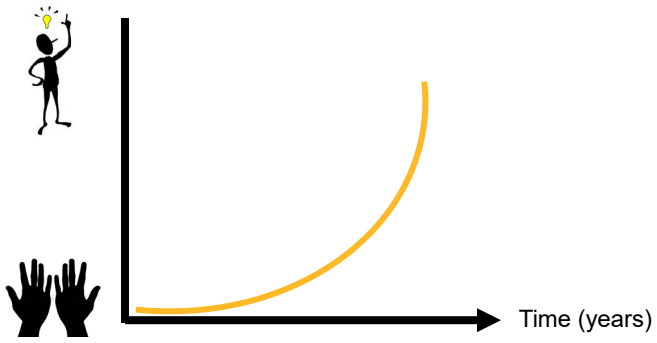
Drafting a patent application

Support full claim scope



Who is an inventor?

- Different than authorship
  - listed order has no legal significance
  - not a 'set of hands'

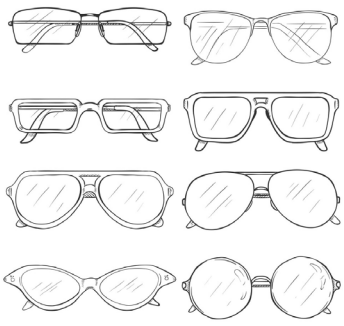


Who is an inventor?

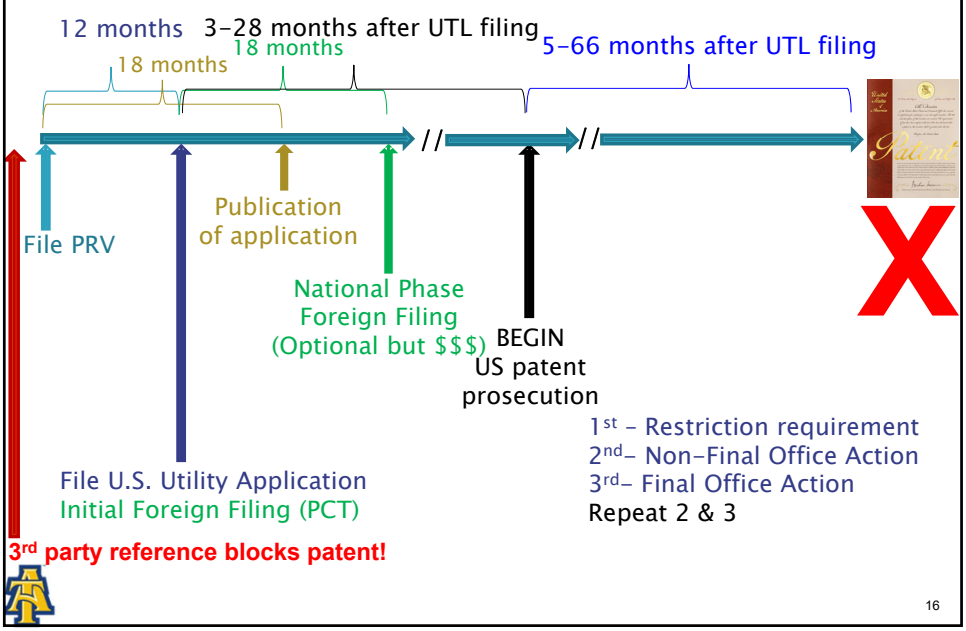
- Contribute to conception of the operative claimed invention
  - Do not have to work in the same place or at the same time
  - Do not have to make an equal contribution
  - Do not have to contribute to every patent claim

What Do I Need for a Patent?

- Invention
  - **Utility** = process, machine, manufactures, composition of matter or improvements
  - **Design** = ornamental (what does something LOOK like?)
  - **Plant** = asexually reproduced new plant
  - Useful
  - Novel
  - Non-Obvious
- Application
  - Written-description
  - Enabled
  - Best Mode
- Money
  - $10,000 – $75,000 (usually $20-$40K)



Patience!



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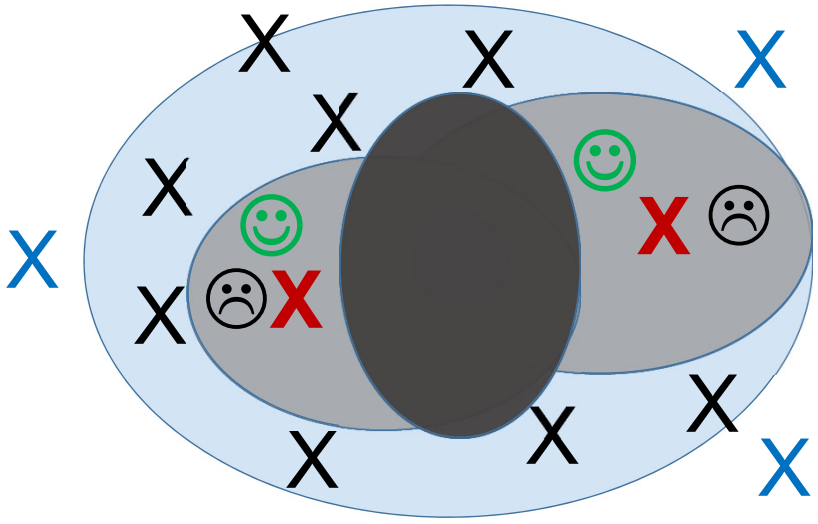
Should you search for 3rd party art?

YES! As well as you can

- Scientific literature
  - GoogleScholar
  - ISI Web of Science
  - Proquest- theses + dissertations
  - ScienceDirect
  - Review articles
  - Bibliographies
- Federally funded projects
  - projectreporter.**NIH**.gov
  - **NSF**.gov/awardsearch
  - **DOD**grantawards.dtic.mil/grants/#/home
  - pamspublic.science.**ENERGY**.gov
  - www.**sbir**.gov/sbirsearch/award/all
- National/regional meetings
  - Posters, abstracts, ~~lunches, dinners~~ zoom meetings
- Patents- applications and issued patents
  - GooglePatents

Patents are Business Tools

Drafting a patent application
= protect commercial embodiments



Can university researchers get a patent?

Yes! Patents align with funding priority– Innovation!

NIH = Is the project original and Innovative?
NSF = Targeting transformative research

Need to know the landscape well for proposal & patent:

- Stronger application
  - Distinguish your work from others
  - Have you already been scooped?
  - Identify additional aspects to research/claim
- Identify other players
  - Potential licensees/competitors– especially in patent search
- Identify dominating work
  - Can you practice the invention?
  - Does your work fill a gap in someone else's?

Should the University apply for a patent?

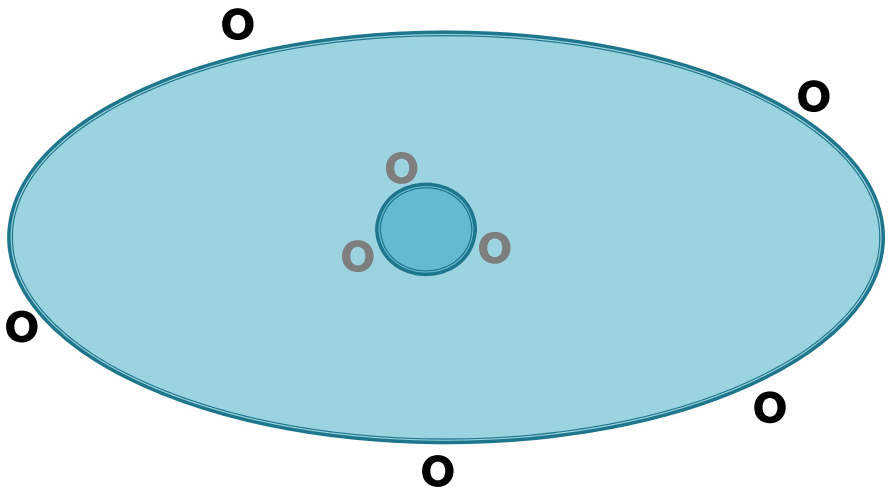
Commercializability NOT just technical merit

- What market need is addressed?
- Is invention better than current product/service?
  - Is invention easily adopted?
  - What are competing price points?
- What is the size of the market?
  - Is there an established customer base?
- How long will the invention be relevant?
  - Time to…Get a patent? Find a partner? Get to market?

Talk to your TTO or your Division of Research

Where does your technology fit?

Platform technology or deep dive into sweet spot?

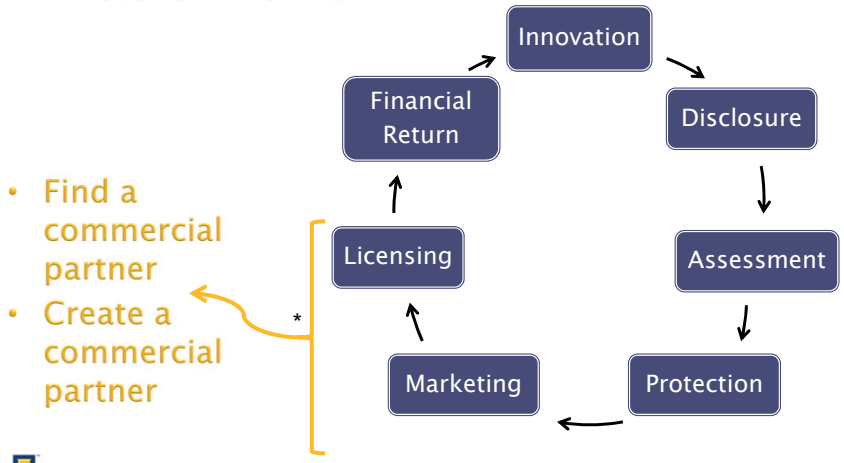


When is a patent/application valuable?

Every step of the process to varying degrees

- Provisional Patent Application
  - Freedom to talk to prospective parties
  - Vote of confidence from university (some expense)
- Utility Patent Application
  - Typically published (and therefore searchable)
  - Bigger vote of confidence from university (more expensive)
  - VC diligence = "people count better than they read"
- Issued U.S. Patent
  - Pro- scope of patent protection is clear
  - Con- scope of patent protection is clear
- Patent Families (and picket fences)
  - Platform technologies true sweet spot
  - **Strongest position** = issued US patent + pending child (*novelty AND opportunity)*

You have IP.
You understand the landscape.
What's next?



* Can be done with your TTO or with Division of Research/Sponsored Programs

Finding a commercial partner
Innovators as prospectors/sales people

- Consider your contacts from regional/national meetings
- Consider your landscape search results (Journals + patents + federal awards)
  - What companies are active in your space?
    - Who are effective points of contact in those companies?
      - It helps to have a champion within the company
      - Don't overlook small companies or be distracted by the behemoths
        - Large companies may not be nimble or willing to scale up University work
  - What is the pitch?
    - Why should the company be interested in your innovation?
      - Remember your "commercializability" answers

Creating a commercial partner
Innovators as entrepreneurs

- Consider relevant University policies
  - IP policy
  - COI Policy
    - "COI and Commitment in Research"
    - "Public Health Funded Research & Cooperative Agreements"
- Consider your business needs
  - A license to university IP?
  - Access university facilities?
  - A business mentor?
  - Funding/investors?

Creating a commercial partner
Finding (and using) your resources

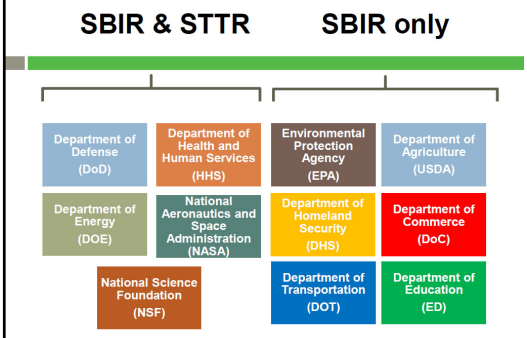
- NSF I-Corps (regional or national)
  - customer discovery, market validation & value proposition
  - gain insight into starting a business or industry requirements/challenges
- Campus + Community entrepreneurship programs
- Small Business (Technology) Development Centers

Creating a commercial partner

Finding money (SBIR/STTR grants)

Small biz develop/commercialize innovative solutions to agency/public need with significant market potential

- Small biz is the awardee
  - for-profit, 51% owned by individuals, under 500 employees
  - 50% of awards go to businesses of less than 10 people



- Federal Agencies with R&D budgets>$100M
- 1 in 9 SBIR funded companies attract equity financing

sbtdc

Tip: Don't judge an agency by its name!

STTR/SBIR Funding

3 Phase program

Phase I
Concept Development
6 months
➢ $150,000 - $250,000
Award rate 15-20%

Phase II
Prototype Development
24 months
>$1.0– $1.5M
Award rate 35-40%

Phase III
Commercialization
No SBIR funding

***TALK to program officers- some agencies require it. ALL recommend it.

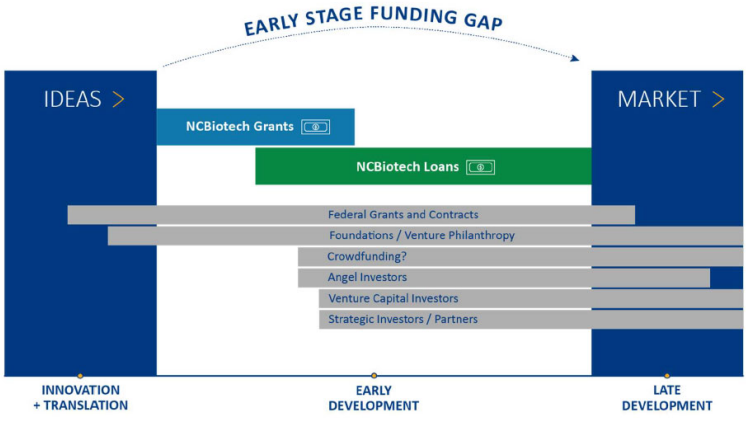
Creating a commercial partner
More on STTR

Cooperative R&D between small biz & universities

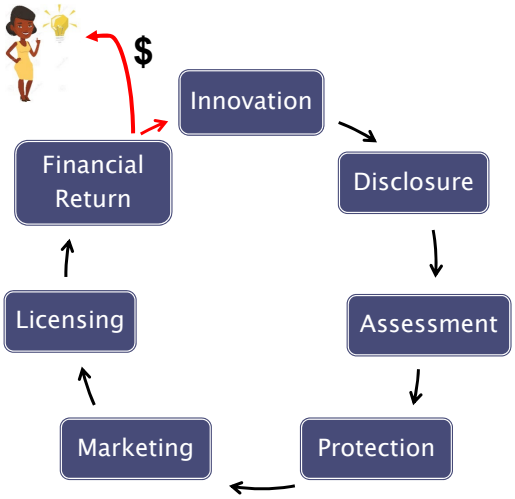
- University spin-out "friendly" mechanism
  - PI can be majority employed by University (but not 100%)
- Small business is the awardee
  - University = up to 60% of work; Small Biz = at least 40%
- Challenge: tailoring Phase 1 proposal
  - Don't overpromise
  - Work within your proposed budget and especially in timeframe
- Opportunity: non-dilutive funding
  - SB(T)DC
  - Agency programs/training
    - APEX = Air Force Academic Partnership Engagement Experiment

Creating a commercial partner
Look everywhere for funding

NC Biotechnology Center



Technology Transfer



Resources

- SBTDC Intellectual Property Handbook
  - www.sbtdc.org/pdf/intellectual-property-guide.pdf
- NC Business Start-up Guide
  - www.sbtdc.org/wp-content/uploads/SBTDC-Start-UpGuide.pdf
- Association of University Technology Managers
  - AUTM.net/careers-and-courses/webinars/free-webinars
- Columbia University "IP for Entrepreneurs"
  - 6 lectures at vimeo.com/showcase/8109550
- Columbia University- University Start ups
  - techventures.columbia.edu/recommended-process-improvements-for-launching-university-startups
- Laura Collins (LCollin1@ncat.edu)
  - https://hub.ncat.edu/administration/research/ip-development-and-commercialization/index.php

I think my spell-checker is broken. It keeps changing l-u-c-k to p-r-e-p-a-r-a-t-i-o-n.

Thank you