INTELLECTUAL PROPERTY, LICENSING TO COMPANIES, STARTING A COMPANY
Gear up for Grants
December 14, 2016

NDSU
WE SERVE OUR CITIZENS
Student Focused, Land Grant, Research University

BASIC PATENT TRANSACTION
- Patentee Gives: Details of How to Make and Use the Invention
  🔄
- Patentee Receives: Right to Exclude Others for a Period of Time From Making, Using or Selling the Invention
- In U.S. Constitution

SOURCES OF PATENT LAW
- U.S. Constitution
- 35 U.S.C.
- 37 C.F.R.
- M.P.E.P.
- Case Law

INVENTION
- Conception Followed by Reduction to Practice
- Conception
  - Formation in the mind of the inventor of a definite and permanent idea
  - Of the complete and operative invention, and
  - Communication of concept to a non-Inventor
- Reduction to Practice
  - Physical making of the invention, including showing it works for its intended purpose
  - Filing a patent application (constructive R2P)

REQUIREMENTS FOR A PATENT
- Utility
  - Credible
  - Substantial
  - Specific
- Novelty
  - Single Reference
- Non-obviousness
  - Multiple References
  - Motivation to Combine
- Enablement
  - Make and Use the Invention

PATENTABLE SUBJECT MATTER
- Machines, Devices, Chemicals
- Methods for Making
- Methods for Using
- DNA
- Nonhuman Plants and Animals
- Business Methods?
DECIDING TO FILE A PATENT APPLICATION

**Whether**
- Technical merit & business value
- Prior art hurdles
- Enablement
- How broad exclusivity does it provide? (exclusivity vs. FTO)
- How much is someone willing to pay for it? (market value & deal structure)
- Can it be sold again? (returned rights)
- Does it have trading value?
- How many things do you have to license to use your invention? (FTO vs. exclusivity)
- Time to product
- Patent path
- Value of Subject Matter
- Commercialization
- Licensing
- Freedom to operate
- Status of Research
- Procedural status of research in hand
- Procedural status of research within a year (funding & faculty interest)
- Time to market
- External Obligations
- Outside inventors
- Licensing responsibilities
- Other Factors
- Imminent public disclosure
- Competitor activity
- Availability of inventors
- Financial Considerations

**When**
- Device
  - Essential components
- How they are connected
- Method/Process
  - Steps
  - Sequential order?
- Chemical Composition
  - Generic formula
  - Acceptable substitutions

PATENT DOCUMENT
- Tells a Story
- Like a Journal Article
- Claims and Detailed Description
- Highlights an Unmet Need or Problem
- Describes How Invention Solves it
- Provides Enabling Description of How to Make and Use the Invention in Broad Terms
- Gives Specific Examples and Results to Support Broad Claims

CLAIMS
- Device
  - Essential components
- How they are connected
- Method/Process
  - Steps
  - Sequential order?
- Chemical Composition
  - Generic formula
  - Acceptable substitutions

PATENT PROCESS
- Decide to File a Patent Application
- Prepare a Patent Application
- File the Patent Application
- Foreign Applications Filed within One Year of U.S. Application
- Prosecute the Application
- Enforce the Issued Patent

WHAT IS A PATENT?
- Legal Document
- Confers a Right to Exclude Others
- Can be Sold, Licensed, Used as Collateral, etc.

WHAT CAN I DO WITH IT?
- Enjoy Your Exclusivity
- License it for Money
- Sell it for Money
- Bargaining Chip
- Add to Resume

PATENT PROCESS Diagram
- Filing
- Conversion
- Go National
- Issue

1. A sandwich comprising:
   2 pieces of bread, peanut butter and jelly, wherein the peanut butter is spread on 1 piece of bread and the jelly is spread on the other piece of bread and then the two pieces of bread are put together so that the peanut butter and jelly are touching.

*With EPO, JP national phase filings*
TYPES OF INTELLECTUAL PROPERTY

- Trade Secret
- Patent
  - Utility
  - Plant
  - Design
- Trademark
  - Widget™ vs. Widget®
- Copyright
  - Writings, Pictures, Images, Software
- Database

LICENSE TO ESTABLISHED ENTITY

- Identify early IP
- Filing Decision
- Define Market
- Define Development Needed & Funding
- ID Potential Customer
- Initial Contact
- Negotiate Terms
- Draft Agreement
- Monitor Diligence
- Collect Payments

FEASIBILITY OF THE IDEA

- Product/Service Feasibility
  - Can you make it
- Industry/Market Feasibility
  - Attractiveness to Market
  - Timing of Introduction
  - Barriers to entry
- Organizational Feasibility
  - Management team
  - Access to Resources (Equipment, supplies, labor)
- Financial Feasibility
  - What do you need to set up
  - What do you need to operate
  - Can you satisfy shareholders (little "o")/"value," big "s"

UNIVERSITY RESEARCH IP HAS TWO COMMERCIAL PATHS

LICENSE TO EXISTING COMPANY

- University IP Based or Significant University’s Interest
  - University Economic Benefit Likely
  - Economic Deepest Value

NEW BUSINESS DEVELOPMENT PROCESS

- University IP Based or Significant University’s Interest
  - University Economic Benefit Likely
  - Economic Deepest Value

BUSINESS DEVELOPMENT PROCESS REQUIRES BRIDGING THE GAP

NEW BUSINESS DEVELOPMENT PROCESS

- Idea Generation
- FEASIBILITY?
- IP?
- TO Business Plan
- BUSINESS PLAN?
- START UP
- MILESTONES?
- EXPANSION?

BUSINESS PLAN

I. Introductory Page
II. Executive Summary
III. Industry Analysis
IV. Description of Venture
V. Production Plan
VI. Operational Plan
VII. Marketing Plan
VIII. Organizational Plan
IX. Assessment of Risk
X. Financial Plan

Background
How you will do it (How opportunity will convert to reality)
Who will buy it and Why (Why is this a good opportunity)
What are the financial flows (Results of this effort on finances)
REASONS BUSINESS PLANS IMplode

- Unreasonable Goals
- Goals Not Measurable
- No Total Commitment
- Lack Of Experience
- No Understanding Of Threats Or Weaknesses
- Customer Need Not Established

TOP TEN ROOKIE LEGAL MISTAKES

- Sloppy Contracts (facilities, services...)
- Weak Employment Contracts
- Poor Corporate Records
- Non-conforming Accounting System
- Protection of Confidential Information
- No Policy Manual (Ambiguous Expectations)
- Employee Education (Conflict of Interest, Intellectual Property)
- Patent Infringement, Copyright Violations
- Inadequate Due Diligence
- Product Puffery, Fraud and Ethics

STAGES OF FUNDING

- Academic/Research
  - NIH
  - NSF
  - USDA
  - NIEHS
  - Foundations
- GAP Funding
  - SBIR
  - STTR
  - SBA
  - Friends, Family
  - Personal Loans
  - Angels
- Institutional Funding
  - Private Equity/VC's
  - Public Equity
  - Collaborations
  - Acquisitions

Scientific Merit
PI Reputation

Milestones
Company Partner

Character
Collateral
Cash Flow
Contribution of Equity

Scientific Merit

Strong Management Team
Distinctive Product
Barriers to Entry
Paths to Break Even and Profitability

SOURCES OF FUNDS

Internal
- Profits
- Sales of Assets - Rent Instead Of Purchase
- Working Capital Reduction
- Extended/Discounted Payment Terms - Suppliers
- Accounts Receivable - Speed Up Collection
- Reduction of:
  - Inventory
  - Cash
  - Working Capital Items

External
- Self
- Family & Friends
- Suppliers & Trade Credit
- Commercial Banks
- Government Loan Programs
- Government Grants
- Angles
- Collaborators
- Venture Capital
- Private Equity Placements
- Public Equity Offerings
- Other Government Programs

TYPES OF FUNDS

- Gifts
- Debt
- New Partners
- Stock

NDSU POLICY

- NDSU Owns IP if:
  - Created in course of employment
  - Substantial use of University resources
  - Assignment of rights to NDSU
- NDSURF Assigns Rights to NDSURF
  - Academic Research
- NDSURF Secures IP and Licenses IP
  - Markets, negotiates, executes agreements
- Revenue sharing: Inventors, NDSU, NDSURF

NDSU-TTO & NDSURF

- Research
- Invention Disclosure
- Assignment
- Federal Reporting
- IP Protection
- Licenses / Marketing
- License
- Commercialization

NDSU Office of Technology Transfer

NDSU Research Foundation