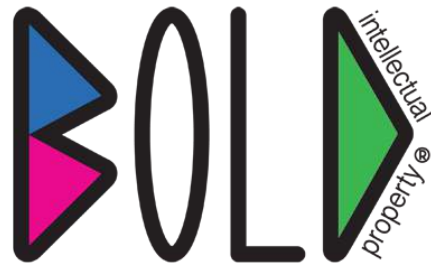


Basics of Patent Law

How to know when to stop what you are doing talk to a patent lawyer

Daniel Cole

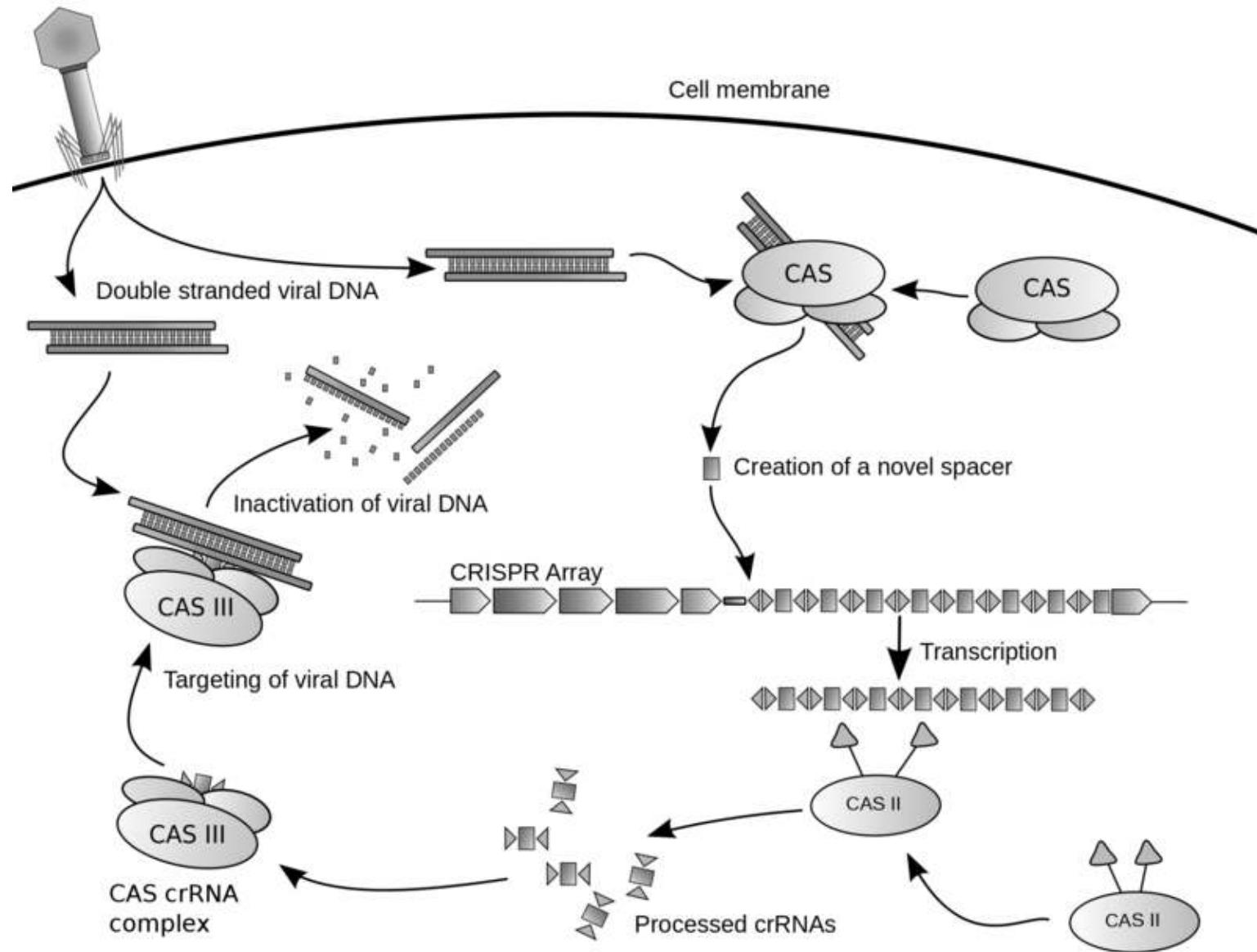


Necessities for a patent

- Patentable Subject matter
 - Machine
 - Process
 - Manufactured Product
 - New State of Matter
 - Not part of judicial exceptions
 - Product of Nature
 - Abstract Idea
- Novel
- Nonobvious
- Useful

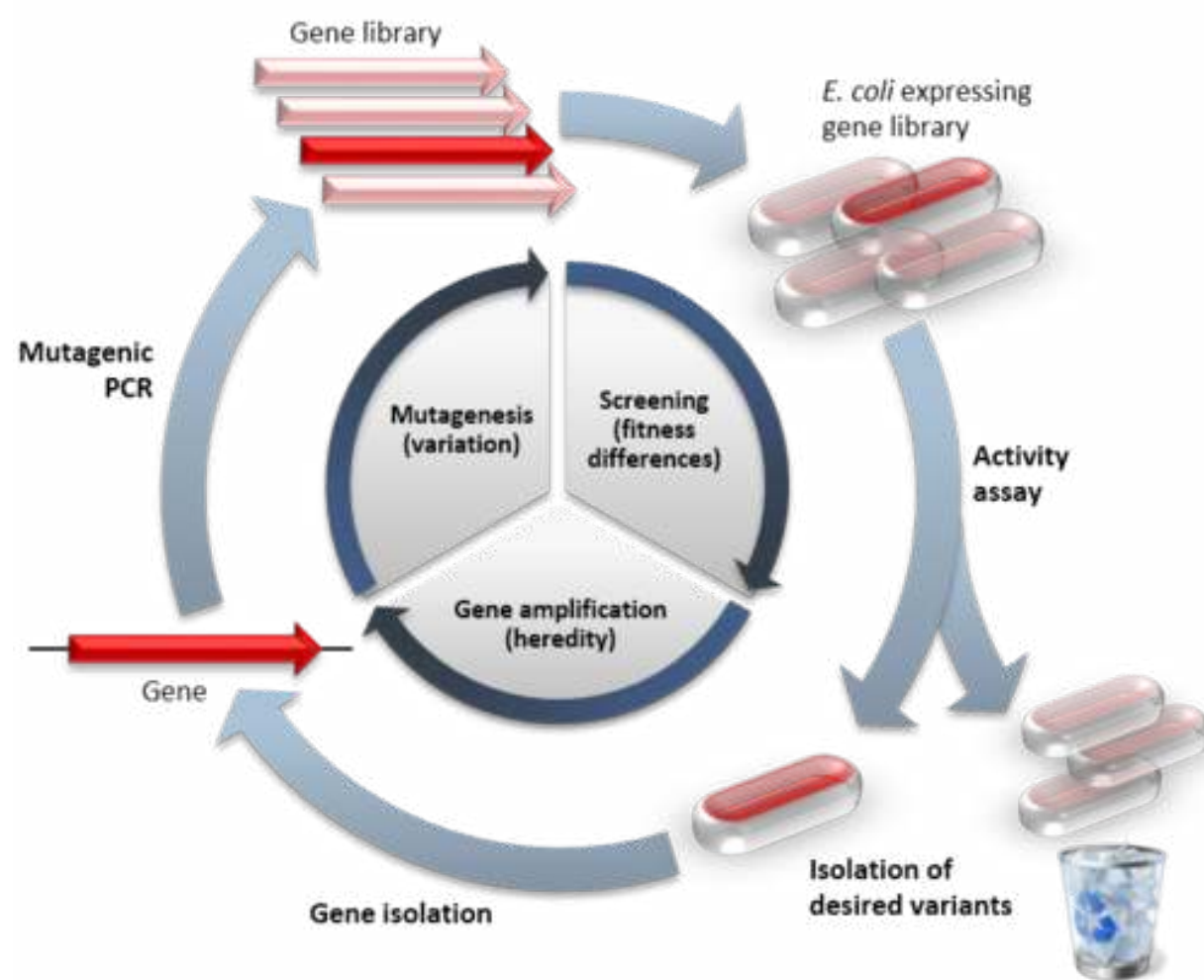
Scientific Sidestep Crisper

- In Bacteria clusters of repeating DNA with what looked like junk DNA in between
- Turns out Junk DNA was pieces of Bacteriophage DNA
- DNA turned into RNA attaches to CRISPER protein
- CRISPER protein finds this DNA in cell in Bacteriophage and snips it removing DNA piece from Bacteriophage – kills bacteriophage.



Scientific Sidestep Directed Evolution

- Various things cause DNA to mutate in bacteria in animals.
- “good” mutations lead to better survival passed on “bad” not
- Directed Evolution – causing mutations selecting mutations lead to specific result.
 - Result may or may not improve bacterial survival – may or may not be bacterial gene being mutated



Patentable Subject Matter

- Most things fall into one of statutory categories
 - But not all – novel and nonobvious cryptographic signal not matter so not patentable (this despite court referencing energy = matter in decision).
- Action in Judicial Exceptions
 - Product of Nature
 - Until recently purified natural products (drugs vitamins) patentable as new states of matter. One aspect of Gene case, besides making natural genes unpatentable, court seemed to say purified natural drugs unpatentable. Stay Tuned.
 - Need to make a change to natural product to patent it – but change needs to be novel and nonobvious.
 - Abstract Idea
 - Mostly important business methods or computer patents
 - Not really about an Idea being “Abstract” as opposed to “Specific”
 - “Old” Ideas put onto internet usually found to be “Abstract” ideas
 - Arguably courts often use Abstract when they should just say obvious

Judicial Exceptions and Crisper

US 2015/0098954 A1

- Crisper Claim 1
 - A non-integrating epichromosomal vector encoding at least one of a Cas gene, Clustard Regularly Interspaced Short Palindromic Repeats (CRISPRs) or CRISPR guide RNA; one or more target sequences, and one or more condition-inducible promoters.
- Could be found to have issues under 101
 - Remember in bacteria DNA use Cas gene, CRISPRs, CRISPR guide RNA, target sequences and certainly promoters of some type.
- Based on how you interpret epichromosomal
 - In Bacteria DNA one chromosome CRISPR integrated into that chromosome
 - BUT bacterial DNA circular, vectors circular, taking out some of circular bacterial DNA enough?
 - NOTE: not limited to any type of organism here – this claim covers doing this in BACTERIA and bacteria take up plasmids from other bacteria in nature.
 - Is this epichromosomal DNA?

Judicial Exceptions and Directed Evolution

US 9,023,594

- A method of continuous evolution of nucleic acids comprising:
 - Introducing a selection phagemid comprising a gene to be evolved into a flow of bacterial host cells through a lagoon,
 - Wherein the host cells comprise phage genes required to package the selection phagemid into infectious phage particles,
 - Wherein at least one gene required to package the selection phagemid into infectious phage particles is expressed in response to expression of the gene to be evolved in the host cell, and wherein the flow rate of the host cells through the lagoon permits the replication of the phagemid but not of the host cells in the lagoon;
 - Replicating and mutating the phagemid within the flow of host cells; and
 - Isolating a phagemid comprising a mutated gene to be evolved from the flow of cells.

Likely not 101 problems here

- Method claim – to be infringing or same as natural system must include ALL parts of the method.
- Mentions particularly here (1) flow of bacterial host cells through a lagoon and (2) permits replication of the phagemid and not the host cell.
- Neither of these things how this happens in nature. Bacteria not flowing through a lagoon as patent defines it and certainly not at a rate where the bacteria do not reproduce.

Meaning of Novel in Patent law

- Like in most legal contexts novel in patent law has a very specific meaning
- Claims attempt to devolve inventions down into specific components (A, B, C, D)
- When one invention is compared to another for the previous invention to make the current invention non-novel it must have ALL of the components or homologues to them
- Invention 1 consists of A, B, C but invention 2 consists of A, B, C, D. 1 does not make 2 non-novel.

Novel and Crisper

- Crisper Claim 1
 - A non-integrating epichromosomal vector encoding at least one of a Cas gene, Clustered Regularly Interspaced Short Palindromic Repeats (CRISPRs) or CRISPR guide RNA; one or more target sequences, and one or more condition-inducible promoters.
- Components (1) non-integrating epichromosomal vector encoding Cas gene; (2) CRISPRs, or CRISPR guide RNA; (3) target sequences; (4) condition-inducible promoters.
- If patent had an integrating epichromosomal vector encoding a cas gene OR a non-integrating epichromosomal vector encoding a different gene – still novel

Novel and Directed Evolution

- Components:
 - (1) host cells with phagemid expression genes, (2) expression of at least one of these genes tied to expression of gene to be evolved, (3) lagoon in which host cells flow in and out at rate where phagemid can replicate host cells can not, (4) replication and mutation of phagemid, (5) Isolation of gene to be evolved from flow of cells
- Do this but with something other than phagemid expression genes or where expression of phagemid genes is NOT tied to expression of gene to be evolved – novel compared to this patent

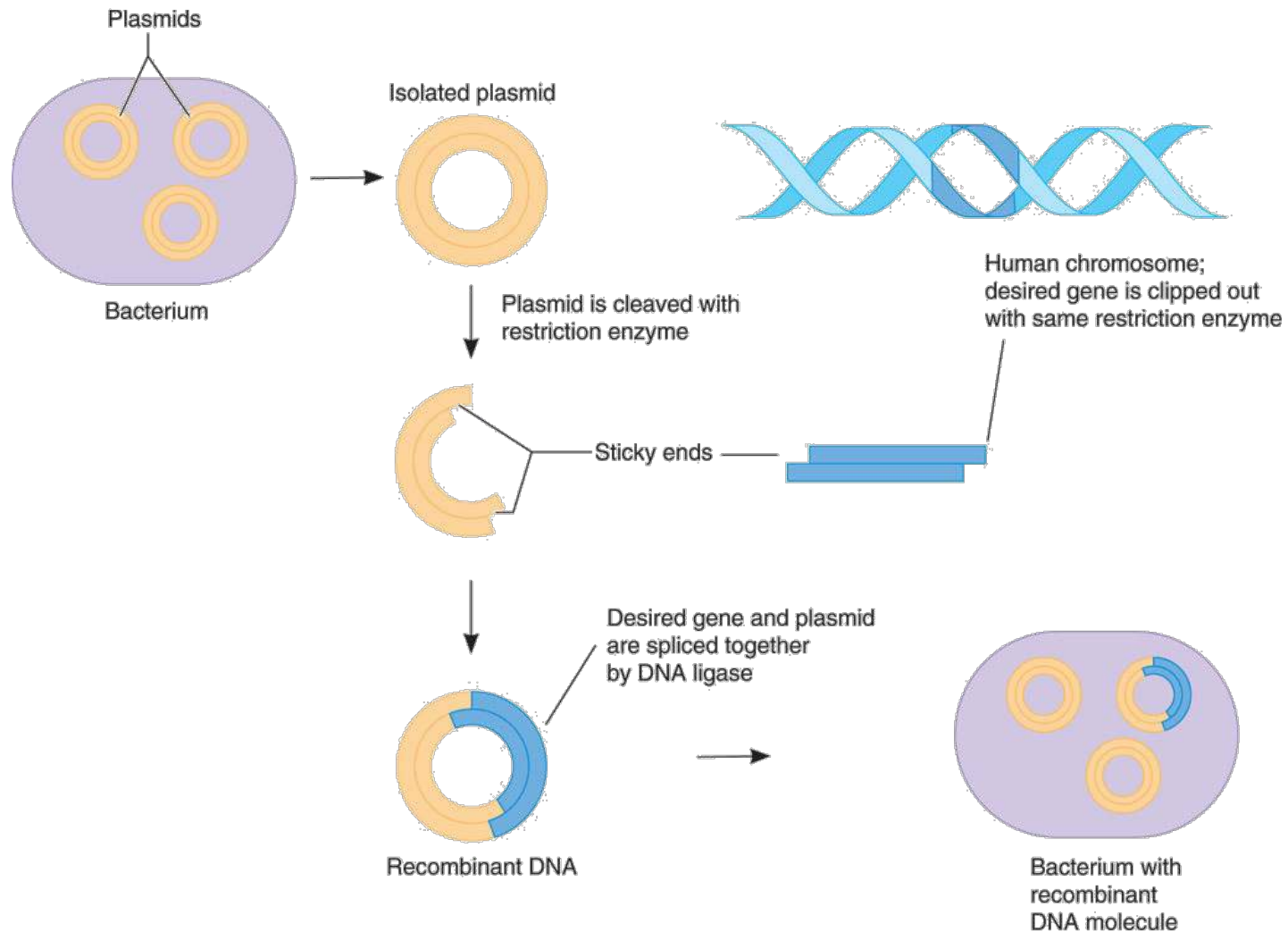
Nonobvious

- Where most patents have issues/Where most patents denied
- Hardest rejection to get around,
 - requires in depth understanding of art your invention and related art – art examiner is citing
 - Close examination of art examiner is citing good argumentation pointing out differences in old and new art
 - Especially hard in cases where components existed separately even if in different contexts you are just combining them (Swiss army knife)
- KSR v. Teleflex
 - Combining prior art known elements according to known methods to achieve predictable results
 - Simple substitution of one known element for another to obtain predictable results
 - Use of known technique to improve similar devices/methods in the same way
 - Application of a known technique to a known device ready for improvement to achieve predictable results
 - Obvious to try
 - Applying known work in one field of endeavor to another field to achieve predictable results
 - Teaching or Motivation

Nonobvious in Biology/Chemistry

- Chemistry compare structure of compounds but not in 3d space
 - Obviously leaves something to be desired – complex compound replacing a methyl group with an ethyl group seems small change in 2d could be big change in 3d
 - Overcome by pointing out unexpected properties of new compound prior art doesn't cure cancer yours does
 - “standpoint of patent law compound and all of its properties are inseparable” properties = the compound (but what if you have very different compounds do the same thing?)
- But discover new property of old compound only get to claim new use
- KSR and Chemical Sciences – unclear stay tuned

Nonobviousness and Crisper



Usefulness

- Easy to get past, exists to allow USPTO easy way to get out of claims to perpetual motion machines or inventions with high unlikelyhood of working.
- You have to prove your invention does something – must be more than a paperweight
- In the past used to deny patents on things court found “not useful” based on moral concerns (gambling machines, dances in copyright) but been (thankfully) discredited.

What a patent lawyer can do for you

- Are you doing something that is covered by a previous patent?
 - Claims very specific but can be broad – patent lawyers try to get as much coverage as possible. Can be difficult without knowledge of law to say what patent actually covers
- Is your idea patentable?
 - Will it pass tests talked about before
- Talk to a patent attorney when
 - Have idea you think is new – want to protect it
 - Doing something you think might be or have been told is infringing on another's patent
 - You want to talk to others about your idea but want to prevent them from disclosing it