

# Drafting of pharmaceutical applications

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# Lines of patent protection

- Compounds + first medical use
- Enantiomers/isomers/polymorphs and PSD
- Synthesis
- Formulations
- Pharmacokinetics/pharmacodynamics
- Second medical use
- Combinations

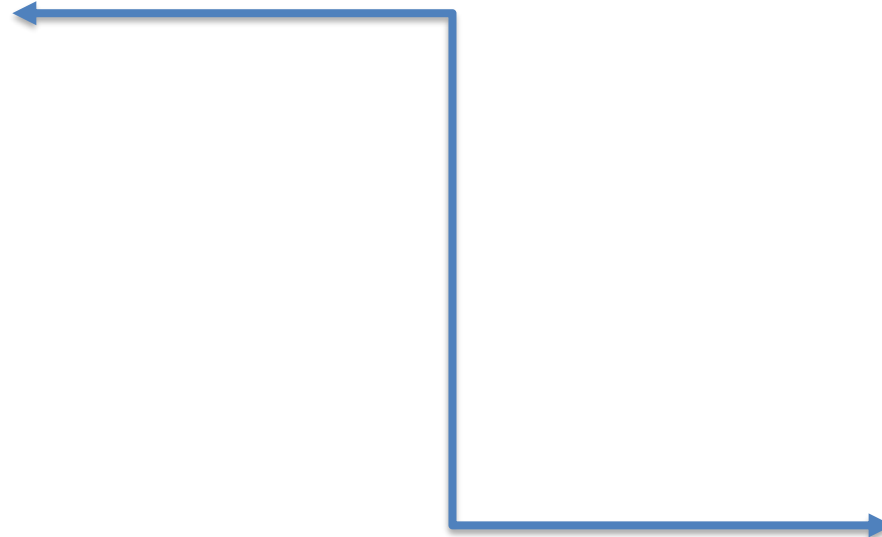


# 2<sup>nd</sup> generation patent protection- OB patents of TACROLIMUS XR TABLET

Patent No	Patent Expiration	Drug Substance	Drug Product	Patent Use Code	Delist Requested	Submission Date
7994214	08/30/2024		DP			08/24/2015
8486993	08/30/2024		DP	<a href="#">U-1752</a>		08/24/2015
8586084	08/30/2024			<a href="#">U-1752</a>		08/24/2015
8591946	08/30/2024		DP			08/24/2015
8617599	08/30/2024		DP			08/24/2015
8623410	08/30/2024		DP			08/24/2015
8623411	08/30/2024			<a href="#">U-1752</a>		08/24/2015
8664239	08/30/2028			<a href="#">U-1752</a> <a href="#">U-2677</a> <a href="#">U-2678</a>		08/24/2015
8685998	08/30/2028		DP	<a href="#">U-1752</a> <a href="#">U-2677</a> <a href="#">U-2678</a>		08/24/2015
8889185	08/30/2024			<a href="#">U-1752</a>		08/24/2015
8889186	08/30/2024			<a href="#">U-1752</a>		08/24/2015
9161907	08/30/2024		DP	<a href="#">U-1752</a>		11/13/2015
9549918	05/30/2028		DP			05/02/2017
9757362	08/30/2024		DP			12/20/2017
9763920	08/30/2024		DP			12/20/2017
10166190	05/30/2028		DP			02/14/2019
10548880	08/30/2024			<a href="#">U-2677</a> <a href="#">U-2678</a>		07/28/2020
10864199	05/30/2028			<a href="#">U-2677</a> <a href="#">U-2678</a>		01/06/2021
11110081	05/30/2028			<a href="#">U-2678</a>		09/16/2021

# Formulation patents

- Difficult to obtain



- Can be easily circumvented

# Why is it difficult to obtain a formulation patent?

## Obviousness rejection:

a formulation is produced by a combination of known excipients thereby allowing the Examiners to assemble several prior art documents, each disclosing a different excipient, and allege arriving at the claimed formulation.

## Inherent obviousness rejection:

While assembling several prior art documents to arrive at the claimed formulation, the Examiners may allege that any unexpected results or properties are inherent.

# Formulations are highly dependent on ingredients, amounts thereof and methods of preparation

Bord Decision in Appeal No. 2012-008189 (Appl. No. 12/002,165), dated March 20, 2015:

“a croissant and bread may share identical ingredients of milk, yeast, sugar, salt, flour, oil, and egg, but differ in proportions and process, to yield different final products.”

## Obviousness of ranges – MPEP 2144.05

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists.

“[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness.”

## Let's take a closer look – case study





# US patent covering a pharmaceutical composition

1. An aqueous composition comprising:

....

wherein the composition comprises from 5% to 90% by weight of water based on the total weight of the composition ...

# Obviousness rejection

Regarding limitation added to claim 1 as “wherein the composition comprises from 5% to 90% by weight of water based on total weight of composition”. The reference teaches such compositions and overlaps with claimed ranges. Applicants have not shown any criticality and unexpected results. Furthermore, those of ordinary skill in the

Consistent with this reasoning, it would have obvious to have selected various combinations of various disclosed ingredients from within a prior art disclosure, to arrive compositions “yielding no more than one would expect from such an arrangement”. In

# Easily designed around?

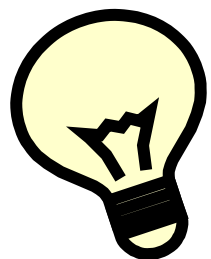
- Replace excipients
- Avoid using some excipients
- Use excipients which are explicitly excluded from the scope of the patent
- Use the same excipients in difference amounts
- Perform structural alterations



# Timing is everything



Early filing - pros	Early filing - cons
beat the “first to file” race	The invention has not yet matured – formulation is not yet final
Initiate the prosecution	
Obtain a patent before regulatory approval	



## How to draft a good application covering a new formulation ?

- Tell a story – the gist of the invention
- Determine prior art boundaries
- Gather sufficient supporting data
- Determine workable ranges
- Prepare fallback positions

## The gist of the invention



The present invention is based, in part, on the unexpected finding...

# Determine prior art boundaries

Perform a search



Draft embodiments that do not overlap with the prior art ranges

## do's and don't's

- If the prior art recites a range of 50-100%
- ✗ A range of about 30% to about 50%
- ✓ A range of about 30% to about 40%
- ✓ A range of about 30% to about 45%



## Gather sufficient supporting data

Go through development notebooks and determine the sufficiency of existing data

Design experiments to help support the inventiveness (over the prior art)

## Determine workable ranges

**of major components:** For aqueous compositions, the percentage of water is from 5% to 90% by weight... from 5% to 50% by weight... from 8% to 20% by weight based on the total weight of the composition

**of minor components:** Draft as many embodiments pertaining to different minor components as possible

## Prepare fallback positions

- ✗ at least 0.001%, 0.01%, 0.1%, 1%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, or 99%
- ✗ ranging from 0.001% to 100%
- ✓ In one embodiment, ...at least 0.001%. In another embodiment, ... at least 0.01% etc.
- ✓ In one embodiment,... ranging from 0.001% to 0.1%. In another embodiment,... ranging from 1% to 5% etc.

# Questions?



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