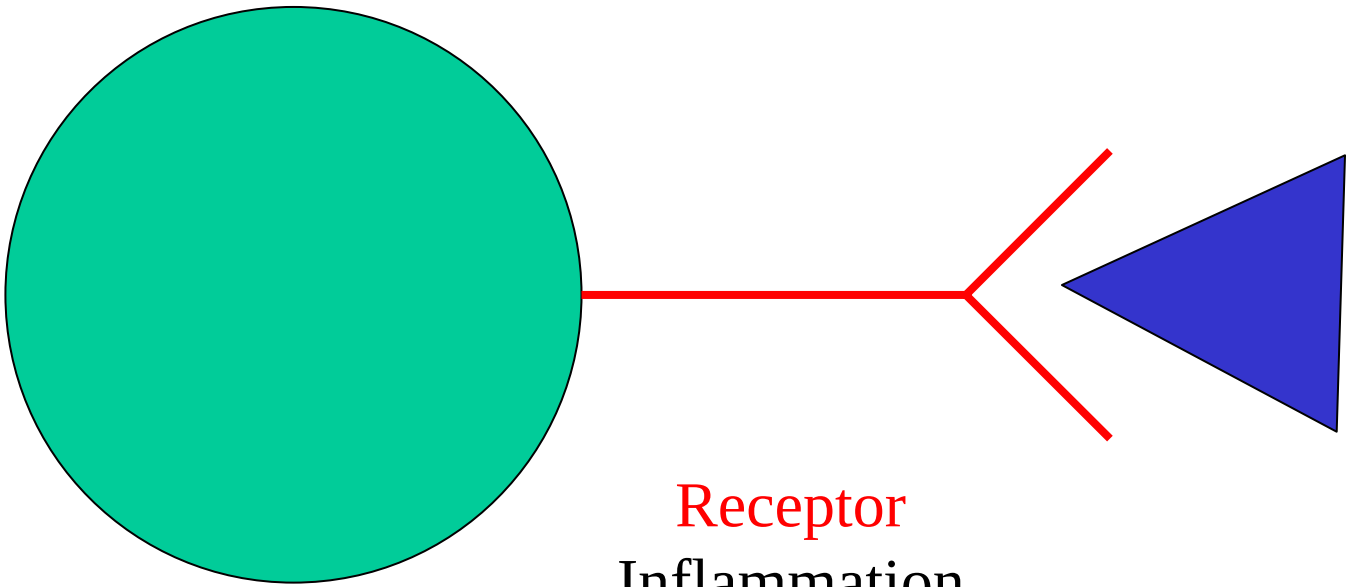
Overview



Receptor

Inflammation

Cell

Antagonist

Antiinflammation drug

University of Rochester:

Identified that a Cox-2 molecule was involved in inflammation and by selectively inhibit it, an anti-inflammation effect was obtained.

The description gives some standard methods to identify suitable inhibitors (molecules which binds to Cox-2).

Around 7 non-steroidal inhibitor compounds actually tested positive.

US6048850

1. A method for selectively inhibiting PGHS-2 [Cox-2] activity in a human host, comprising administering a non-steroidal compound that selectively inhibits activity of the PGHS-2 gene product to a human host in need of such treatment.

EP667911 B1

1. A method of determining the ability of a compound to inhibit ..PGHS-2..comprising

   (a) adding ..amount of said compound to… PGHS-2…

   (c) measuring PGHS-2 activity…

19. An isolated PGHS-2 molecule.

Article "www.law.com"; September 8, 2000:

"The University of Rochester may not leap to mind when you think of top research institutions. But that doesn't mean the New York school isn't a gold mine for patent attorneys.

The university is suing a pair of pharmacuetical giants for rights to the Cox-2 inhibitors, or so-called "super aspirins." Billions in royalties are at stake in the case, one of the biggest in patent history."

Trilateral (EPO, USPTO and JPO) report named "Reach-through claims" (November 5-9, 2001).

http://www.european-patent-office.org/tws/sr-3.htm

Case 4:

The application describes the isolation of a receptor (SEQ ID NO: 4) … as well as methods of screening for compounds that activate this receptor. The application further discloses that the receptor is useful for the treatment of obesity [to fat].

The patent application specification includes a specific description of a series of screening procedures commensurate in scope with those recited in the claims.

In addition, the application discloses three working examples wherein agonists of this receptor, i.e., compounds activating this receptor, namely X, Y, and Z were identified using the disclosed screening procedure.

Furthermore, the pharmacological mechanism involved in the treatment or inhibition of obesity by the activation of this receptor is described theoretically in the specification.

In addition, *in vivo* test data confirms that at least compound X is able to activate this receptor when administered to a host animal and such administration results in a reduction in total body weight of an art recognized model for obesity.

The application provides *no structural information* for compounds other than X, Y, or Z or methods of making compounds other than X, Y, or Z.

Claims:

1. An isolated and purified receptor ...

2. A method of identifying an agonist of the receptor of claim 1 comprising:

preparing a candidate compound,

contacting .. said receptor .. with said candidate compound, and

determining whether said candidate compound activates the receptor of claim 1,…

3. An isolated and purified receptor agonist identified by the method of claim 2.

4. (*EPO*) Use of a receptor agonist for the manufacture of a medicament for inhibiting obesity, wherein said receptor agonist is identified by the method of claim 2.

4. (*USPTO*) A method for the treatment of obesity comprising administering to a host in need thereof a therapeutically effective amount of the agonist identified by the method of claim 2.

5. (*EPO*) Use of compound X for the manufacture of a medicament for inhibiting obesity.

5. (*USPTO*) A method for the treatment of obesity comprising administering to a host in need thereof a therapeutically effective amount of compound X.

3. *An isolated and purified receptor agonist identified by the [screening] method of claim 2.*

EPO: claims No. 3 will already be objected to at the search stage. A meaningful search is not possible, since it would require a minimum of structural information: The functional feature "binding to a receptor" may be an inherent known or unknown feature of any known and unknown organic or inorganic compound (a partial search for the compounds X,Y,Z is of course possible).

There is no sufficient disclosure of the technical solution to the problem, i.e. the *structurally defined compounds*. It would be an undue burden to isolate and to characterize possibly binding compounds without any clue to their chemical structure, or to test each and every known and future compound from all areas of organic and inorganic chemistry whether it falls within the scope of the claim.

USPTO: Since the claim fails to indicate that a representative number of *structurally related compounds* is disclosed, the artisan would not know the identity of a reasonable number of representative compounds falling within the scope of the instant claim and consequently would not have know how to make them. An assay for *finding* a product is not equivalent to a positive recitation of *how to make* a product.

T241/95 (Serotonin receptor/ELI LILLY).

Main request: “The use of fluoxetine [*specific product*], ..for the preparation of a medicament for treating a mammal suffering from or susceptible to a condition which can be improved or prevented by selective occupation of the 5-HTIC receptor”.

BA found that claimed specific compound “fluoxetine” had a number of functions and it was not testable whether or not its therapeutic effect was due to its receptor occupation as such or due to one of the other functions

=> when having a disease not mentioned explicitly in text, it was not possible to test if “fluoxetine” gave it therapeutically effect due to the specific occupation of the receptor or for any other reason

=> not possible to test if within or without scope of claim =>

⇒functional definition of main request A84 unclear (*3.1.4*).

However, first auxiliary request was held A84 clear. This request read: “The use fluoxetine, ..for treating a… obesity, bulimia, alcoholism, pain, sleep apnea, obsessive-compulsive disorders, substance abuse or migraine”.

Case 3 (Trilateral report)

The application describes the isolation of a protein (SEQ ID NO: 3) which meets the novelty and inventive step (non-obviousness) requirements. Based upon the disclosed homology to known R-receptor amino acid sequences, there is no reason to doubt that the claimed receptor represents a new member of this protein family.

Claim 1: An isolated and purified receptor the sequence of which consists of SEQ ID NO: 3.

EPO:

Even though the outline for case 3 states that the protein (SEQ ID NO:3) meets the inventive step and non-obviousness requirements, the EPO position is that such a claim cannot meet the requirements of **Inventive Step.** Prima facie, the routine provision of further sequences having the same general function as the known prior art sequences of closely related structure is **not inventiv**e. The **structural non-obviousness** is not a reason to accept an inventive step; sequences as well as all other chemical compounds should **solve a technical problem** in a non-obvious manner to be recognized as inventive.

OD (Novel V28 seven transmembrane receptor) Dated 20 June 2001.

Case related to the prediction of a receptor based on homology analysis.

Claim: A purified .. V28 seven transmembrane receptor set out in SEQ ID NO:28 ..

OD found:

"That it is important to determine the degree of characterization of the disclosed V28 protein in comparison with the state of the *art at the time of filing* of the application before a problem is formulated."

=> analyses and found that description just disclosed function based on homology predictions following known homology prediction strategies

=> "The problem to be solved can be formulated as the provision of the nucleotide sequence encoding an additional 7TM [V28] protein *which is predicted to function as a receptor* (*3 - iii*)..

=> OD decided NOT INVENTIVE by stating "This solution cannot be considered to be inventive because document D1 provides a sequence alignment of 74 known 7TM [V28] receptors, …and indicates that sequence similarity is useful in designing cloning strategies for other receptors.

=> Therefore, the existence of additional 7TM [V28] receptors was *predicted* in the prior art..

Conclusions

1: If one has identified a novel receptor and has identified a number of suitable ligands (antagonist/agonist), one should try to identify some kind of structural element which could unify them. This is in order to get a hopefully broad but structurally limited claim.

2. If one has identified that a specific compound binds to a receptor and thereby useful in treatment of diseases where receptor is important, one should try to include a concrete list of diseases where the receptor is important.

3. If one has a new amino acid sequence and predicts, based on homology, that it should be a receptor X, one could consider not to include to much text, in the patent application, in relation to how it was actually predicted. This is particular relevant, when prediction was made on closely homologous public available sequence information.