

## Claims

1. The use of Cathepsin H for identifying compounds that modulate neuropathic pain.
2. The use of a non-human transgenic animal heterologously expressing Cathepsin H for identifying or analyzing compounds that modulate neuropathic pain.
3. The use of a non-human transgenic animal heterologously expressing Cathepsin H as a model system for enhanced neuropathic pain sensitivity.
4. The use of a non-human Cathepsin H knock-out animal for identifying or analyzing compounds that modulate neuropathic pain.
5. The use of a non-human Cathepsin H knock-out animal as a model system for lowered neuropathic pain sensitivity.
6. The use of a cell heterologously expressing Cathepsin H ~~or a functional fragment thereof~~ for identifying compounds that modulate neuropathic pain; ~~wherein said functional fragment has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NHNap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NHMec, Pro-Gly+Phe, Pro-Arg+NHNap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage of native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen.~~
7. The use of a cell heterologously expressing Cathepsin H ~~or a functional fragment thereof~~ as a model system for enhanced neuropathic pain sensitivity; ~~wherein said functional fragment has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NHNap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NHMec, Pro-Gly+Phe, Pro-Arg+NHNap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage of native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen.~~
8. The use of a Cathepsin H knock-out cell for identifying or analyzing compounds that modulate neuropathic pain.

9. The use of a Cathepsin H knock-out cell as a model system for lowered neuropathic pain sensitivity.
10. The use of a cell heterologously expressing a reporter gene expressibly linked to the Cathepsin H promoter and/or enhancer ~~or a functional fragment thereof~~ for identifying or analyzing compounds that modulate neuropathic pain, ~~wherein said functional fragment has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NHNap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NHMec, Pro-Gly+Phe, Pro-Arg+NHNap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage of native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen.~~
11. A method of identifying or analyzing compounds modulating and/or preventing neuropathic pain, comprising the steps
  - a. Providing at least two samples;
  - b. Contacting one sample containing Cathepsin H ~~or a functional fragment or derivative thereof~~ with a compound,
  - c. determining the activity of Cathepsin H in the presence of compound,
  - d. determining the activity of Cathepsin H in the absence of compound, and
  - e. comparing the activity of Cathepsin H according to c) with that according to d);

~~wherein said functional fragment or derivate has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NHNap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NHMec, Pro-Gly+Phe, Pro-Arg+NHNap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage or native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen,~~

~~and wherein said derivate comprises a chemical or biological modification leading to the stabilization of the polypeptide or polynucleotide or enabling a specific targeting of the polypeptide or polynucleotide to certain cells or facilitating its entry into or its uptake by cells.~~

12. A method for identifying or analyzing compounds that modulate and/or prevent

neuropathic pain comprising:

- a. Contacting a Cathepsin H protein ~~or functional fragment or derivative thereof~~ with a test compound; and
- b. Determining whether the test compound modulates the activity of the Cathepsin H protein ~~or functional fragment or derivative thereof~~.

13. A method for identifying or analyzing compounds that modulate and/or prevent neuropathic pain comprising:

- a. Contacting a cell, in which Cathepsin H ~~or a functional fragment or derivative thereof~~ are present, with a test compound;
- b. Determining whether the test compound is able to modulate the amount or activity of Cathepsin H ~~or the functional fragment or derivative thereof~~ present in the cell;

~~wherein said functional fragment or derivate has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NHNap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NHMec, Pro-Gly+Phe, Pro-Arg+NHNap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage or native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen,~~

~~and wherein said derivate comprises a chemical or biological modification leading to the stabilization of the polypeptide or polynucleotide or enabling a specific targeting of the polypeptide or polynucleotide to certain cells or facilitating its entry into or its uptake by cells.~~

14. A method for identifying or analyzing compounds that modulate and/or prevent neuropathic pain comprising:

- a. Contacting a nucleic acid coding for a Cathepsin H protein ~~or a functional fragment or derivative thereof~~ with a test compound in a transcriptionally active system, and

- b. Determining the amount of mRNA coding for the Cathepsin H protein ~~or the functional fragment or derivative thereof~~ present in said system in presence of said compound, and
- c. Determining whether the compound is capable of modulating the amount of mRNA coding for the Cathepsin H protein ~~or functional fragment or derivative~~ present in said system;

~~wherein said functional fragment or derivate has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NHNap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NHMec, Pro-Gly+Phe, Pro-Arg+NHNap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage or native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen,~~

~~and wherein said derivate comprises a chemical or biological modification leading to the stabilization of the polypeptide or polynucleotide or enabling a specific targeting of the polypeptide or polynucleotide to certain cells or facilitating its entry into or its uptake by cells.~~

15. A method for identifying compounds or analyzing compounds that modulate and/or prevent neuropathic pain comprising:

- a. Providing a cell transfected with a nucleic acid vector comprising the promoter of a Cathepsin H gene ~~or a functional fragment thereof~~ operationally coupled to a reporter gene ~~or a functional fragment thereof~~:

- b. Providing a cell transfected with a control vector which comprises a reporter gene ~~or a functional fragment thereof~~ not being operationally coupled to a functional Cathepsin H promoter;
  - c. Determining the reporter gene activity of the cell according to a) and b) in the presence of a test compound;
  - d. Determining the reporter gene activity of the cell according to a) and b) in absence of the test compound;
- ~~wherein said functional fragment or derivate has one or more of the functional characteristics of the full-length protein selected from the group consisting of protease activity, cleavage of Bz-Arg+NH-Nap, Bz-Arg+NH-Mec, Bz-Phe-Val-Arg+NH-Mec, Pro-Gly+Phe, Pro-Arg+NH-Nap, H-Arg-NH-Mec, Bz-Arg-NH-Mec, Bz-ArgNH-Mec and/or H-Cit-NH-Mec, cleavage or native C5 and generation of chamotaxin C5a, processing of hydrophobic surfactant associated protein C, and cleavage and/or degradation of fibronectin and fibrinogen.~~