~~WHAT IS CLAIMED IS:~~

1. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof, which specifically binds to at least one epitope on the β-amyloid protein wherein the epitope comprises at least two consecutive amino acid residues predominantly involved in binding to the antibody, wherein the at least two consecutive amino acid residues are selected from the group consisting of:

a) –Lys-Leu- embedded within the following core sequence (SEQ ID NO: 10):

Xaa1 – Xaa2 - Lys - Leu – Xaa3 wherein

Xaa1 is an amino acid selected from the group consisting of His, Asn, Gln Lys, and Arg,

Xaa2 is an amino acid selected from the group consisting of Asn and Gln; and

Xaa3 is an amino acid selected from the group consisting of Ala, Val, Leu, norleucine, Met, Phe, and Ile

and

b) Phe-Phe- embedded within the following core sequence (SEQ ID NO: 9):

Xaa3 - Phe – Phe – Xaa4 – Xaa5 – Xaa6, wherein

Xaa3 is an amino acid residue selected from the group consisting of Ala, Val, Leu, norleucine, Met, Phe, and Ile;

Xaa4 is an amino acid residue selected from the group consisting of Ala, Val, Leu, Ser and Ile;

Xaa5 is an amino acid residue selected from the group consisting of Glu and Asp,

and

Xaa6 is an amino acid residue selected from the group consisting of Glu and Asp,

wherein said chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof comprises a variant Fc region, and wherein said variant Fc region comprises at least one amino acid modification relative to a wild type Fc region, such that said molecule has modified effector function than the wild type Fc region.

2. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which specifically binds to at least two epitopes on the β-amyloid protein, wherein said at least two epitopes each comprise at least two consecutive amino acid residues predominantly involved in the binding of the antibody, which are - Phe - Phe –and - Lys - Leu –, respectively, and wherein said at least two distinct binding sites exhibit amino acid sequence –Val - Phe - Phe - Ala - Glu – Asp - shown in SEQ ID NO: 7 and amino acid sequence His - Gln - Lys - Leu – Val - shown in SEQ ID NO: 8, respectively.

3. A humanized antibody or a fragment thereof which comprises in the variable region at least one CDR of non-human origin and one or more human- or primate-derived framework regions and, optionally, a constant region derived from a human or primate source antibody, which humanized antibody or fragment thereof is capable of specifically binding β-amyloid protein, β-amyloid monomeric peptide, polymeric soluble amyloid pepides comprising a plurality of β-amyloid monomeric units, β-amyloid fibers, fibrils or filaments, and a β-amyloid polymeric peptide in isolation or as part of a β-amyloid plaque, at an epitope comprising the following amino acid sequence (SEQ ID NO: 11):

Xaa1 – Xaa2 - Lys - Leu – Xaa3 - Phe – Phe- Xaa4 – Xaa5 – Xaa6, wherein

Xaa1 is an amino acid residue selected from the group consisting of His, Asn, Gln, but particularly His;

Xaa2 is an amino acid residue selected from the group consisting of Asn and Gln, but particularly Gln; and

Xaa3 is an amino acid residue selected from the group consisting of Val, Leu, and Ile, but particularly Val;

Xaa4 is an amino acid residue selected from the group consisting of Ala and Val, but particularly Ala;

Xaa5 is an amino acid residue selected from the group consisting of Glu and Asp, but particularly Glu; and

Xaa6 is an amino acid residue selected from the group consisting of Glu and Asp, but particularly Asp.

4. A humanized antibody or a fragment thereof according to claim 1, wherein the humanized antibody comprises variable regions with human- or primate-derived framework regions and at least one CDR with an amino acid sequence selected from the group of sequences consisting of SEQ ID NO:1 representing CDR1, SEQ ID NO: 2 representing CDR2 and SEQ ID NO: 3 representing CDR3 of the Heavy Chain Variable Region (HCVR) and SEQ ID NO: 4 representing CDR1, SEQ ID NO: 5 representing CDR2 and SEQ ID NO: 6 representing CDR3 of the Light Chain Variable Region (LCVR).

5. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof, wherein at least one of the amino acids of a light chain and a heavy chain CDR region as given in SEQ ID NOs: 1-6 is changed through a conservative substitution such that the antibody maintains its full functionality.

6. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof, according to claim 5, wherein within the amino acid sequence of CDR2 of the light chain variable region (LCVR) as given in SEQ ID NO: 5, the Lys at Kabat position 50 is replaced by Arg, Gln or Glu, but particularly by Arg, and/or the Ser at Kabat position 53 is replaced by Asn or Thr, but particularly by Asn, and/or the Asn at Kabat position 53 is replaced by Ala, Val, Leu, Ser and Ile; but expecially Ser.

7. A humanized antibody or a fragment thereof according to claim 1, wherein at least one of the amino acids of the human- or primate-derived framework region is changed through a substitution to an amino acid from the corresponding region of murine antibody ACI-01-Ab7C2 or a substitution conservative thereto.

8. A humanized antibody or a fragment thereof according to claim 162, wherein

the Trp in Kabat position 47 in the human- or primate-derived framework region of the Heavy Chain Variable Region as shown in SEQ ID NO: 15 is replaced by an amino acid selected from the group consisting of Leu, norleucine, Ile, Val, Met, Ala, and Phe, particularly Leu and Ile, but especially Leu and/or

~~the Arg in Kabat position 94 in the human- or primate-derived framework~~ region of the Heavy Chain Variable Region as shown in SEQ ID NO: 15 is replaced by an amino acid selected from the group consisting of Ser and Thr, but especially by Ser, and/or

the Tyr in Kabat position 87 in the human- or primate-derived framework region of the Light Chain Variable Region as shown in SEQ ID NO: 12 is replaced by an amino acid selected from the group consisting of Phe, Leu, Val, Ile, and Ala, particularly by Leu and Phe, but especially by Phe.

9. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof antibody according to claim 1, wherein the heavy chain variable region (HCVR) has an amino acid sequence that is 90%, particularly 95%, more particularly 98%, even more particularly 100% identical to the sequence set forth in SEQ ID NO: 15 and 16, respectively.

10. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, wherein the light chain variable region (LCVR) has an amino acid sequence that is 90%, particularly 95%, more particularly 98%, even more particularly 100% identical to the sequence set forth in SEQ ID NO: 12 and 13, respectively.

11. A humanized antibody or a fragment thereof according to claim 1, wherein at least two, but especially three, of the CDR regions of the heavy chain variable region (HCVR) have an amino acid sequence that is 90%, particularly 95%, more particularly 98%, even more particularly 100% identical to the corresponding CDR region set forth in SEQ ID NOs: 1-3.

12. A humanized antibody or a fragment thereof according to claim 1, wherein at least two, but especially three, of the CDR regions of the light chain variable region (LCVR) have an amino acid sequence that is 90%, particularly 95%, more particularly 98%, even more particularly 100% identical to the corresponding CDR region set forth in SEQ ID NOs: 4-6.

13. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, wherein the antibody is capable of inhibiting

~~aggregation of A β monomers and disaggregating polymeric fibrils or filaments,~~ especially polymeric fibrils or filaments paired with a high degree of conformational sensitivity.

14. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody, upon co-incubation with a β-amyloid monomeric peptide selected from Aβ monomeric peptides 1-39; 1-40, 1-41, and 1-42, and/or a polymeric soluble β-amyloid peptide comprising a plurality of said Aβ monomeric peptides, and particularly with an Aβ1-42 monomeric peptide and/or an Aβ polymeric soluble amyloid peptide comprising a plurality of Aβ1-42 monomeric peptides, inhibits the aggregation of the Aβ monomers into high molecular polymeric fibrils or filaments, and, upon co-incubation with preformed high molecular polymeric amyloid fibrils or filaments formed by the aggregation of β-amyloid monomeric peptides selected from Aβ monomeric peptides 1-39; 1-40, 1-41, and 1-42, and particularly by the aggregation of Aβ1-42 monomeric peptides, is capable of disaggregating the preformed polymeric fibrils or filaments.

15. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody substantially binds to aggregated Aβ in the brain of a subject selected from a mammal and a human.

16. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody reduces Aβ plaque burden in the brain of a mammal or a human.

17. A nucleic acid molecule comprising a nucleotide sequence encoding a chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1 or a nucleotide sequence selected from a sequence encoding SEQ ID NO: 2 and SEQ ID NO: 3, representing the Complementarity Determining Regions (CDRs) 2 and 3 of the Heavy Chain Variable Region (HCVR), respectively, a sequence encoding SEQ ID NO: 4, representing CDR 1 of the Light Chain Variable Region (LCVR), SEQ ID NO: 18, SEQ ID NO: 19, SEQ ID NO: 20, a sequence encoding the light chain variable region of SEQ ID NO: 22, a sequence encoding the light chain variable region of SEQ ID NO: 22 and the light chain

~~constant region of SEQ ID NO: 23, a sequence encoding the heavy chain variable~~ region of SEQ ID NO: 25 and a sequence encoding the heavy chain variable region of SEQ ID NO: 25 and the heavy chain constant region of SEQ ID NO: 26.

18. An expression vector comprising the nucleic acid molecule of claim 17.

19. A cell comprising an expression vector according to claim 18.

20. A composition comprising the antibody according to claim 1 including any functionally equivalent antibody or functional parts thereof in a therapeutically effective amount and optionally further comprising a pharmaceutically acceptable carrier.

21. A composition comprising a chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1 including any functionally equivalent antibody or functional parts thereof and, optionally, further comprising a further biologically active substance in a therapeutically effective amount and/or a pharmaceutically acceptable carrier and/or a diluent and/or an excipient, wherein the further biologically active substance is selected from a compound used in the treatment of amyloidosis, compounds against oxidative stress, anti-apoptotic compounds, metal chelators, inhibitors of DNA repair such as pirenzepin and metabolites, 3-amino-1-propanesulfonic acid (3APS), 1,3-propanedisulfonate (1,3PDS), α-secretase activators, β- and γ–secretase inhibitors, tau proteins, neurotransmitters, β-sheet breakers, attractants for amyloid beta clearing/depleting cellular components, inhibitors of N-terminal truncated amyloid beta including pyroglutamated amyloid beta 3-42, anti-inflammatory molecules, and cholinesterase inhibitors (ChEIs), such as tacrine, rivastigmine, donepezil, and/or galantamine, M1 agonists and other drugs including any amyloid or tau modifying drug and nutritive supplements, and, optionally, a pharmaceutically acceptable carrier and/or a diluent and/or an excipient.

22. A method for preventing, treating or alleviating the effects of one or more amyloidosis-related diseases selected from amyloidosis, neurological disorders such as Alzheimer's Disease (AD), Lewy body dementia, Down's syndrome,

hereditary cerebral hemorrhage with amyloidosis (Dutch type), the Guam Parkinson-Dementia complex; progressive supranuclear palsy, multiple sclerosis; Creutzfeld Jacob disease, Parkinson's disease, HIV-related dementia, ALS (amyotropic lateral sclerosis), Adult Onset Diabetes, senile cardiac amyloidosis, endocrine tumors, and macular degeneration in a subject in need thereof, comprising administering a chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof and/or a functional part thereof according to claim 1 to a subject affected by such a disorder in a therapeutically effective amount.

23. A method according to claim 22, wherein treatment of a subject, particularly a mammal or a human, suffering from an amyloid-associated condition characterized by a loss of cognitive memory capacity leads to an increase in the retention of cognitive memory capacity or complete restoration thereof.

24. A method of diagnosis of an amyloid-associated disease or condition in a subject comprising

(a) bringing a tissue sample or a specific body part or body area of the subject suspected to contain the amyloid protein into contact with an antibody according to claim 1;
(b) allowing the antibody to bind to the amyloid protein;
(c) detecting the antibody bound to the protein; and
(d) correlating the presence or absence of antibody binding with the presence or absence of amyloid protein in the sample or specific body part or area.

25. A method of determining the extent of amyloidogenic plaque burden in a tissue and/or body fluids of a subject comprising

(a) obtaining a sample representative of the tissue and/or body fluids in a subject under investigation;
(b) testing said sample for the presence of amyloid protein with an antibody according to claim 1;
(c) determining the amount of antibody bound to the protein; and

(d) calculating the plaque burden in the tissue and/or body fluids of the subject.

26. A test kit for the detection and diagnosis of amyloid-associated diseases and conditions comprising an antibody according to claim 1 and optionally further comprising instructions for using the antibodies for the purpose of binding to amyloid protein to form an immunological complex and detecting the formation of the immunological complex such that presence or absence of the immunological complex correlates with the presence or absence of amyloid protein.

27. An isolated light chain variable region (LCVR) comprising human- or primate-derived framework regions and at least one CDR having an amino acid sequence selected from SEQ ID NO: 4, SEQ ID NO: 5, and SEQ ID NO: 6.

28. An isolated heavy chain variable region (HCVR) comprising human- or primate-derived framework regions and at least one CDR having an amino acid sequence selected from the group of sequences consisting of SEQ ID NO: 2 and SEQ ID NO: 3.

29. A light chain variable region (LCVR) of SEQ ID NO: 12.

30. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, wherein the antibody or fragment thereof substantially binds Aβ monomers and/or Aβ fibers, fibrils or filaments and/or soluble polymeric amyloid beta, and wherein the antibody or fragment thereof does not show any significant cross-reactivity with amyloid precursor protein (APP).

31. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 30, wherein said antibody or fragment binds to an Aβ monomer with a binding affinity represented by a KD in a range selected from a group consisting of from at least about 1 x 10-7 M to at least about 1 x 10-12 M, from at least about 1 x 10-8 M to at least about 1 x 10-11 M, from at least about 1 x 10-8 M to at least about 1 x 10-10 M, and from at least about 1 x 10-8 M to at least about 5 x 10-8. M, and wherein said antibody or fragment binds to an Aβ fiber, fibril or filament with a binding affinity represented by a KD in a range selected from a group consisting of from at least about 1 x 10-7M to at least about 1 x 10-12 M, from

~~at least about 1 x 10-8M to at least about 1 x 10-11M, from at least about 1 x 10-9M~~ to at least about 1 x 10-10M, and from at least about 2 x 10-9M to at least about 8 x 10-9M.

32. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 30, wherein the antibody has a higher affinity to soluble polymeric amyloid beta and Aβ fibers, fibrils or filaments, than to Aβ monomers.

33. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 32, wherein said antibody or fragment thereof exhibits a binding affinity to an Aβ fiber, fibril or filament which is at least 10 times, particularly at least 15 times, more particularly at least 20 times, and especially at least 25 times higher than the binding affinity to an Aβ monomer.

34. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody substantially binds to aggregated Aβ, Aβ plaques and/or soluble fibers in the mammalian, particularly the human brain but, preferably, does not show any significant cross-reactivity with amyloid precursor protein (APP).

35. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody or fragment thereof is capable of shifting the equilibrium between Aβ in its soluble and aggregated state towards its soluble form by disaggregating fibers to soluble poly- and monomeric forms by inducing a shift in conformation and binding and stabilizing the disaggregated and solubilized Aβ forms in the tissue and/or body fluids, particularly the brain.

36. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 35, which antibody or fragment thereof is capable of inducing a transition of the β-sheet conformation towards an α-helix and/or a random coil conformation, but particularly a random coil conformation, even more particularly a random coil conformation at a given location in the molecule, especially in the environment of Tyr 10 and Val12 of the Aβ protein, which leads to an increase

of the random coil conformation at the expense of the β-sheet conformation and an improved solubilization of the preformed high molecular polymeric amyloid fibrils or filaments.

37. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 36, wherein the decrease of the β-sheet conformation amounts to at least 30%, particularly to at least 35%, and more particularly to at least 40% and more as compared to the respective preformed amyloid polymeric fibrils or filaments incubated in buffer (control).

38. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 35, which antibody or fragment thereof substantially binds to polymeric soluble Aβ protein species, and/or less aggregated soluble Aβ protein species and/or monomeric forms of soluble Aβ protein, thus modifying the peripheral clearing and catabolism of these Aβ protein species and reducing their toxic effects.

39. A method according to claim 23, wherein the humanized antibody or a fragment thereof binds aggregated amyloid beta outside the brain.

40. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody or fragment thereof is capable of shifting the equilibrium between Aβ in its soluble and aggregated state towards its soluble form by disaggregating fibers to soluble poly- and monomeric forms.

41. A chimeric antibody or a fragment thereof, or a humanized antibody or a fragment thereof according to claim 1, which antibody or fragment thereof does not substantially bind Aβ in human tissue and/or body fluids, particularly the brain, but is capable of shifting the equilibrium between Aβ in its soluble and aggregated state towards its soluble form by disaggregating fibers to soluble poly- and monomeric forms by inducing a shift in conformation and binding and stabilizing the disaggregated and solubilized Aβ forms in the tissue and/or body fluids, particularly the brain.

42. A humanized antibody or a fragment thereof according to claim 1, wherein said antibody or fragment thereof exhibits a binding affinity which is at least 5 times, 10 times, particularly at least 15 times, more particularly at least 20 times, but especially at least 100 times higher than the binding affinity of the mouse antibody.

43. A humanized antibody or a fragment thereof according to claim 1, wherein the affinity, specificity and stability of said antibody or fragment thereof has been modified by a change of the glycosylation profile.

44. The antibody of claim 1, wherein the amino acid modification results in a reduced effector function.

45. The antibody or fragment thereof of claim 44, wherein the Fc region amino acid modification comprises a change in one or more of amino acid positions 238, 239, 248, 249, 252, 254, 265, 268, 269, 270, 272, 278, 289, 292, 293, 294, 295, 296, 298, 301, 303, 322, 324, 327, 329, 333, 335, 338, 340, 373, 376, 382, 388, 389, 414, 416, 419, 434, 435, 437, 438 or 439.

46. The antibody or fragment thereof of claim 44, wherein the Fc region amino acid modification comprises a D265A amino acid mutation.

47. An antibody comprising at least one variable region as in SEQ ID NO: 27 or SEQ ID NO: 29, or a variant thereof.

48. A cell line expressing the antibody of claim 47.

49. A method for disaggregating preformed beta-amyloid fibers, comprising interacting an hC2 antibody with preformed beta-amyloid fibers.

50. A humanized antibody or a fragment thereof according to claim 1, wherein said antibody or fragment thereof protects neurons from Abeta-induced degradation.

51. A method of preventing Abeta-induced neuron degradation comprising treating neurons with an effective amount of a humanized antibody or a fragment thereof according to claim 1.

52. The antibody or fragment thereof of claim 1, wherein the variant Fc region is a variant IgG1 Fc region.

Claims

1. A chimeric antibody or fragment thereof, or humanized antibody or a fragment thereof capable of specifically binding beta amyloid, wherein the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof comprises the amino acid sequence of SEQ ID NO:1 representing CDR1, the amino acid sequence of SEQ ID NO: 2 representing CDR2 and the amino acid sequence of SEQ ID NO: 3 representing CDR3 of the Heavy Chain Variable Region (HCVR) and wherein the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof comprises an IgG1 Fc region comprising an amino acid modification at any one or more of amino acid positions 238, 239, 248, 249, 252, 254, 265, 268, 269, 270, 272, 278, 289, 292, 293, 294, 295, 296, 298, 301, 303, 322, 324, 327, 329, 333, 335, 338, 340, 373, 376, 382, 388, 389, 414, 416, 419, 434, 435, 437, 438 or 439 of the Fc region.

2. A chimeric antibody or fragment thereof, or humanized antibody or a fragment thereof capable of specifically binding beta amyloid, wherein the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof comprises the amino acid sequence of SEQ ID NO: 4 representing CDR1, the amino acid sequence of SEQ ID NO: 5 or SEQ ID NO: 5 with one amino acid modification representing CDR2, and the amino acid sequence of SEQ ID NO: 6 representing CDR3 of the Light Chain Variable Region (LCVR) and wherein the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof, comprises an IgG1 Fc region comprising an amino acid modification at any one or more of amino acid positions 238, 239, 248, 249, 252, 254, 265, 268, 269, 270, 272, 278, 289, 292, 293, 294, 295, 296, 298, 301, 303, 322, 324, 327, 329, 333, 335, 338, 340, 373, 376, 382, 388, 389, 414, 416, 419, 434, 435, 437, 438 or 439 of the Fc region.

3. The chimeric antibody or fragment thereof, or humanized antibody or a fragment thereof, according to claim 1, wherein the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof further comprises the amino acid sequence of SEQ ID NO: 4 representing CDR1, the amino acid sequence of SEQ ID NO: 5 or SEQ ID NO: 5 with one amino acid modification representing CDR2, and the amino acid sequence of SEQ ID NO: 6 representing CDR3 of the Light Chain Variable Region (LCVR).

4. The chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to claim 1 wherein within the amino acid sequence of CDR2

of the light chain variable region (LCVR) as given in SEQ ID NO: 5, the Lys at Kabat position 50 is replaced by Arg, Gln or Glu, but particularly by Arg, and/or the Ser at Kabat position 53 is replaced by Asn or Thr, but particularly by Asn, and/or the Asn at Kabat position 53 is replaced by Ala, Val, Leu, Ser or Ile, but especially Ser.

5. The humanized antibody or the fragment thereof according to claim 1, 2, or 3, wherein the humanized antibody or the fragment thereof comprises variable regions with human- or primate-derived framework regions, and wherein at least one of the amino acids of the human- or primate-derived framework region is changed through a substitution to an amino acid from the corresponding region of murine antibody ACI-01-Ab7C2, deposited on December 1, 2005 with the "Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH" (DSMZ) in Braunschweig, Mascheroder Weg 1 B, 38124 Branuschweig, under the provisions of the Budapest Treaty under accession no DSM ACC2750, or a substitution conservative thereto.

6. The humanized antibody or the fragment thereof according to claim 5, wherein the humanized antibody or the fragment thereof comprises variable regions with human- or primate-derived framework regions, and wherein:

(a) the Trp in Kabat position 47 in the human- or primate-derived framework region of the Heavy Chain Variable Region is replaced by an amino acid selected from the group consisting of Leu, norleucine, Ile, Val, Met, Ala, and Phe; and/or

(b) the Arg in Kabat position 94 in the human- or primate-derived framework region of the Heavy Chain Variable Region is replaced by Ser, and/or

(c) the Tyr in Kabat position 87 in the human- or primate-derived framework region of the Light Chain Variable Region is replaced by an amino acid selected from the group consisting of Phe, Leu, Val, Ile, and Ala.

(d) the Gln in Kabat position 45 in the human- or primate-derived framework region of

the Light Chain Variable Region is replaced by Lys.

7. The humanized antibody or the fragment thereof according to claim 1, 2, or 3, wherein the humanized antibody or the fragment thereof comprises variable regions with human- or primate-derived framework regions, and wherein the heavy chain variable region (HCVR) comprises an amino acid sequence that is 90%, particularly 95%, more particularly 98%, even more particularly 100% identical to the sequence set forth in SEQ ID NO: 15.

8. The humanized antibody or the fragment thereof according to claim 1, 2, or 3, wherein the humanized antibody or the fragment thereof comprises variable regions with human- or primate-derived framework regions, and wherein the light chain variable region (LCVR) comprises an amino acid sequence that is 90%, particularly 95%, more particularly 98%, even more particularly 100% identical to the sequence set forth in SEQ ID NO: 12.

9. The humanized antibody or the fragment thereof according to claim 1, 2, or 3, wherein the humanized antibody or the fragment thereof comprises variable regions with human- or primate-derived framework regions, and wherein the LCVR comprises the amino acid sequence of SEQ ID NO: 12 and the HCVR comprises the amino acid sequence of SEQ ID NO: 15.

10. The chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof of claim 1, 2, or 3, wherein the amino acid modification results in a reduced effector function.

11. The chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-9, comprising the Fc region variant D265A.

12. A nucleic acid molecule comprising a nucleotide sequence encoding the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof, according to claim 1, 2, or 3, or a nucleotide sequence selected from: a sequence encoding SEQ ID NO: 2 and SEQ ID NO: 3 representing the Complementarity Determining Regions (CDRs) 2 and 3 of the Heavy Chain Variable Region (HCVR), respectively; a sequence encoding SEQ ID NO: 4 representing CDR 1 of the Light Chain Variable Region (LCVR); SEQ ID NO: 18 encoding CDR2 of the HCVR; SEQ ID NO: 19 encoding CDR3 of the HCVR; SEQ ID NO: 20 encoding CDR1 of the LCVR; SEQ ID NO: 21 encoding a light chain variable region; SEQ ID NO: 24 encoding a heavy chain variable region, or SEQ ID NO: 22 encoding a light chain.

13. An expression vector comprising the nucleic acid molecule of claim 12.

14. A cell comprising an expression vector according to claim 13.

15. A composition comprising the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof, according to any one of claims 1-11 in a therapeutically effective amount and optionally further comprising a pharmaceutically acceptable carrier.

16. A composition comprising the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-11 and, optionally, further comprising a further biologically active substance in a therapeutically effective amount and/or a pharmaceutically acceptable carrier and/or a diluent and/or an excipient, wherein the further biologically active substance is selected from a compound used in the treatment of amyloidosis, compounds against oxidative stress, anti-apoptotic compounds, metal chelators, inhibitors of DNA repair such as pirenzepin and metabolites, 3-amino-1-propanesulfonic acid (3APS), 1,3-propanedisulfonate (1,3PDS), α-secretase activators, β- and γ–secretase inhibitors, tau proteins, neurotransmitters, β-sheet breakers, attractants for amyloid beta clearing/depleting cellular components, inhibitors of N-terminal truncated amyloid beta including pyroglutamated amyloid beta 3-42, anti-inflammatory molecules, and cholinesterase inhibitors (ChEIs), such as tacrine, rivastigmine, donepezil, and/or galantamine, M1 agonists and other drugs including any amyloid or tau modifying drug and nutritive supplements, and, optionally, a pharmaceutically acceptable carrier and/or a diluent and/or an excipient.

17. Use of the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-11 in the preparation of a medicament for preventing, treating or alleviating the effects of one or more amyloidosis-related diseases selected from amyloidosis, neurological disorders such as Alzheimer's Disease (AD), Lewy body dementia, Down's syndrome, hereditary cerebral hemorrhage with amyloidosis (Dutch type), the Guam Parkinson-Dementia complex; progressive supranuclear palsy, multiple sclerosis; Creutzfeld Jacob disease, Parkinson's disease, HIV-related dementia, ALS (amyotropic lateral sclerosis), Adult Onset Diabetes, senile cardiac amyloidosis, endocrine tumors, Abeta-induced neuron degradation, and macular degeneration, in a subject in need thereof.

18. The use according to claim 17, wherein treatment of a subject, particularly a mammal or a human, suffering from an amyloid-associated condition characterized by a loss of cognitive memory capacity leads to an increase in the retention of cognitive memory capacity or complete restoration thereof.

19. An *in vitro* method of diagnosis of an amyloid-associated disease or condition comprising:

(a) bringing an isolated tissue sample of a subject suspected to contain the amyloid protein into contact with the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-11;

(b) allowing the antibody or fragment thereof to bind to the amyloid protein;

(c) detecting the antibody or fragment thereof bound to the protein; and

(d) correlating the presence or absence of antibody or fragment thereof binding with the presence or absence of amyloid protein in the sample or specific body part.

20. An *in vitro* method of determining the extent of amyloidogenic plaque burden in an isolated sample of tissue and/or isolated body fluids of a subject comprising:

(a) testing said sample for the presence of amyloid protein with the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-11;

(b) determining the amount of antibody or fragment thereof bound to the protein; and

(c) calculating the plaque burden in the tissue and/or body fluids of the subject.

21. A test kit for the detection and diagnosis of amyloid-associated diseases and conditions comprising the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-11 and optionally further comprising instructions for using the antibodies for the purpose of binding to amyloid protein to form an immunological complex and detecting the formation of the immunological complex such that presence or absence of the immunological complex correlates with the presence or absence of amyloid protein.

22. A nucleic acid molecule comprising a nucleotide sequence encoding the chimeric antibody or the fragment thereof, or the humanized antibody or the fragment thereof according to any one of claims 1-11.

23. A method for preparing a chimeric antibody or fragment thereof, or humanized antibody or fragment thereof, wherein the method comprises culturing a cell comprising the nucleic acid molecule of claim 12 or claim 22.

24. A method for preparing a chimeric antibody or fragment thereof, or humanized antibody or fragment thereof, wherein the method comprises expressing the nucleic acid molecule of claim 12 or claim 22 or the vector of claim 13.