

WHAT IS CLAIMED IS:

1. A monoclonal antibody or antigen-binding fragment thereof, characterized by the monoclonal antibody or the antigen-binding fragment thereof specifically binds to a non-denatured amino acid sequence, and the non-denatured amino acid sequence is selected from the group consisting of amino acid sequences listed as SEQ ID NOs: 1 to 11;

or

characterized by the monoclonal antibody or the antigen-binding fragment thereof comprises:

a heavy chain variable (VH) domain comprising amino acid sequences listed as SEQ ID NO: 18, 19, 20 and/or 21, and a light chain variable (VL) domain comprising amino acid sequences listed as SEQ ID NO: 22, 23, 24 and/or 25; or

a VH domain comprising amino acid sequences encoded by nucleic acid sequences listed as SEQ ID NOs: 26, 27, 28 and/or 29, and a VL domain comprising amino acid sequences encoded by nucleic acid sequences listed as SEQ ID NOs: 30, 31, 32 and/or 33; or

a VH domain comprising an amino acid sequence listed as SEQ ID NOs: 34 or 35, and a VL domain comprising an amino acid sequence listed as SEQ ID NOs: 36 or 37; or

a VH domain comprising an amino acid sequence encoded by a nucleic acid sequence listed as SEQ ID NOs: 38 or 39, and a VL domain comprising an amino acid sequence encoded by a nucleic acid sequence listed as SEQ ID NOs: 40 or 41.

2. The monoclonal antibody or antigen-binding fragment thereof of claim 1, wherein the monoclonal antibody is a chimeric antibody, a murine antibody, a humanized antibody, a human-murine chimeric antibody, an antibody-drug conjugate (ADC), and the antigen-binding fragment of the monoclonal antibody is a single-chain variable fragment (scFv), a scFv dimer [(scFv)₂], a scFv trimer [(scFv)₃], a variable fragment (Fv), a Fab fragment, a Fab' fragment, a dimeric Fab' fragment [F(ab')₂], a nanobody, a single domain antibody or any combination thereof.

3. The monoclonal antibody or antigen-binding fragment thereof of any one of claims 1 to 2, wherein the antigen-binding fragment of the monoclonal antibody is modified by conjugation, coupling, glycosylation, tag attachment or any combination thereof.

4. The monoclonal antibody or antigen-binding fragment thereof of any one of claims 1 to 3, wherein the monoclonal antibody or antigen-binding fragment thereof is a bifunctional monoclonal antibody (BsAb) or a trifunctional monoclonal antibody or antigen-binding fragment thereof.

5. The monoclonal antibody or antigen-binding fragment thereof of any one of claims 1 to 4, wherein the monoclonal antibody or antigen-binding fragment thereof belongs to IgG class including IgG1 isotype, IgG2 isotype, IgG3 isotype or IgG4 isotype, IgM class, IgA class, IgD class or IgE class.

6. The monoclonal antibody or antigen-binding fragment thereof of any one of claims 1 to 5, wherein the monoclonal antibody or antigen-binding fragment thereof belongs to an inert antibody or an antagonist antibody.

7. The monoclonal antibody or antigen-binding fragment thereof of any one of claims 1 to 6, wherein the monoclonal antibody or fragment thereof specifically inhibits or alleviates activities of one or more PTX3 proteins.

8. A kit for detecting PTX3, comprising a monoclonal antibody or antigen-binding fragment thereof of any one of claims 1 to 7, wherein the monoclonal antibody or the antigen-binding fragment thereof specifically binds to a non-denatured amino acid sequence, and the non-denatured amino acid sequence is selected from the group consisting of amino acid sequences listed as SEQ ID NOs: 1 to 11.

9. A medicinal composition, comprising an effective dose of a monoclonal antibody or an antigen-binding fragment thereof of any one of claims 1 to 8 as an active ingredient and a pharmaceutically acceptable carrier.

10. The medicinal composition of claim 9, further comprising an active pharmaceutical ingredient.

11. The medicinal composition of claim 9, wherein the effective dose is 2 mg/kg body weight (mg/kg BW) to 10 mg/kg BW.

12. Use of a monoclonal antibody or antigen-binding fragment thereof in the manufacture of a medicament for specifically inhibiting or alleviating a disease or a symptom related to PTX3 binding to PTX3 receptor, wherein the medicament is a medicinal composition of any one of claims 9 to 11 and the monoclonal antibody or antigen-binding fragment thereof is present in an effective dose, thereby inhibiting or alleviating binding of PTX3 to PTX3 receptor.

13. The use of claim 12, wherein the disease or the symptom comprises carcinoma including lung cancer, breast cancer and nasopharyngeal cancer; adenocarcinoma including colorectal cancer and glioblastoma multiforme (GBM); and fibrosis including fibrosis in lung, liver, kidney and skin.

14. The use of claim 12, wherein the medicament is to be administered via subcutaneous injection, intramuscular injection, intravenous injection, intraperitoneal injection, orthotopic injection, oral administration or nasal inhalation.

15. The use of claim 12, wherein proliferation, cancer stemness, migration, invasiveness, metastasis, tumor volume or drug resistance is inhibited or alleviated.

16. A monoclonal antibody or an antigen-binding fragment thereof of any one of claims 1 to 8 for use as a medicament.