As such, there exists a need for developing new approaches, including improved agents, for treating, preventing and diagnosing FGF23-associated disorders and other disorders that share similar disease mechanisms.

SUMMARY

In one aspect, this disclosure provides an isolated antibody molecule or antigen-binding fragment thereof, capable of binding to FGF23, comprising a heavy chain variable region (VH) comprising an HCDR1 amino acid sequence of SEQ ID NO: 41, an HCDR2 amino acid sequence of SEQ ID NO: 46, and an HCDR3 amino acid sequence of SEQ ID NO: 53; and a light chain variable region (VL) comprising an LCDR1 amino acid sequence of SEQ ID NO: 59, an LCDR2 amino acid sequence of SEQ ID NO: 68, and an LCDR3 amino acid sequence of SEQ ID NO: 73.

In an aspect, this disclosure provides a pharmaceutical composition comprising the isolated antibody molecule or antigen-binding fragment thereof of any one of the preceding claims and a pharmaceutically acceptable carrier, excipient or stabilizer.

In an aspect, this disclosure provides an isolated nucleic acid encoding the VH and VL of the antibody molecule or antigen-binding fragment thereof as described herein.

In an aspect, this disclosure provides an expression vector comprising the nucleic acid as described herein.

In an aspect, this disclosure provides a host cell comprising the nucleic acid as described herein or the vector as described herein.

In an aspect, this disclosure provides a method of producing an antibody molecule or antigen-binding fragment thereof, comprising culturing the host cell as described herein under conditions suitable for gene expression.

In an aspect, this disclosure provides an *in vitro* method of inhibiting FGF23, comprising contacting FGF23 with an antibody molecule or antigen-binding fragment thereof as described herein, or a pharmaceutical composition as described herein.

In an aspect, this disclosure provides a use of an antibody molecule or antigen-binding fragment thereof as described herein, or a pharmaceutical composition as described herein, in the manufacture of a medicament for treating or preventing a FGF23-associated disorder, wherein the FGF23-associated disorder is chosen from X-linked hypophosphatemic rickets (XLH), autosomal recessive hypophosphatemic rickets (ARHR) (e.g., ARHR 1 or ARHR2), autosomal dominant hypophosphatemic rickets (ADHR), osteoglophonic dysplasia, Jansen-type metaphyseal chondrodysplasia, hypophosphatemia with dental abnormality and ectopic calcification, McCune-Albright syndrome, epidermal nevus syndrome (ENS), or tumor-induced osteomalacia (TIO).

In an aspect, this disclosure provides a method of detecting FGF23, comprising (i) contacting a sample with an antibody molecule or antigen-binding fragment thereof as described herein under conditions that allow interaction of the antibody molecule or antigen-binding fragment thereof and

FGF23 to occur, and (ii) detecting formation of a complex between the antibody molecule or antigen-binding fragment thereof and the sample.

In an aspect, this disclosure provides an antibody molecule or antigen-binding fragment thereof as described herein, or a pharmaceutical composition as described herein, for use in treating a disorder in a subject.

This disclosure provides, at least in part, antibody molecules that bind to FGF23, *e.g.*, human FGF23 (*e.g.*, human FGF23 comprising the amino acid sequence of SEQ ID NO: 82), and that comprise one or more functional and structural properties disclosed herein. In an embodiment, the antibody molecule binds to and/or reduces (*e.g.*, inhibits, blocks, or neutralizes) one or more activities of FGF23. In an embodiment, the antibody molecule is selected from **Table 1**, or competes for binding to FGF23 with an antibody molecule selected from **Table 1**. In an embodiment, the antibody molecule binds to the same or overlapping epitope as the epitope recognized by an antibody molecule selected from **Table 1**. In an embodiment, the antibody molecule comprises one or more heavy chain variable regions and/or one or more light chain variable regions described in **Table 1**. In an embodiment, the antibody molecule comprises one or more heavy chain CDRs and/or one or more light chain CDRs described in **Table 1**. In an embodiment, nucleic acid molecules encoding the antibody molecules, expression vectors, host cells, compositions (*e.g.*, pharmaceutical compositions), kits, containers, and methods for making the antibody molecules, are also provided. The antibody molecules disclosed herein are suitable for use in reducing or inhibiting undesired activation of the FGF pathway (*e.g.*, by abnormally increasing the level of FGF23) or a component thereof. The antibody molecules disclosed herein can be used (alone or in combination with other agents or therapeutic modalities) to treat, prevent and/or diagnose FGF23-associated disorders.

Accordingly, in an aspect, this disclosure provides an antibody molecule, *e.g.*, an antibody molecule described herein, having one or more (*e.g.*, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or all) of the following properties:

a) Binds to FGF23 (*e.g.*, human FGF23) with high affinity, *e.g.*, with a dissociation constant (K_D') of about 50 nM or less, *e.g.*, about 20 nM or less, 10 nM or less, 9 nM or less, 8 nM or less, 7 nM or less, 6 nM or less, 5 nM or less, 4 nM or less, 3 nM or less, 2 nM or less, 1 nM or less, 0.9 nM or less, about 0.8 nM or less, about 0.7 nM or less, about 0.6 nM or less, about 0.5 nM or less, about 0.4 nM or less, about 0.3 nM or less, about 0.2 nM or less, about 0.1 nM or less, about 0.05 nM or less, about 0.04 nM or less, about 0.03 nM or less, about 0.02 nM or less, about 0.01 nM or less, 0.005 nM or less, 0.002 nM or less, or 0.001 nM or less, *e.g.*, between 0.001 nM and 1 nM, between 0.001 nM and 0.9 nM, between 0.001 nM and 0.8 nM, between 0.001 nM and 0.7 nM, between 0.001 nM and 0.6 nM, between 0.001 nM and 0.5 nM, between 0.001 nM and 0.4 nM, between 0.001 nM and 0.3 nM, between 0.001 nM and 0.2 nM, between 0.001 nM and 0.1 nM, between