

HUMANIZED ANTIBODY MOLECULES TO CD138 AND USES THEREOF

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 62/862,457, filed June 17, 2019, and U.S. Provisional Application No. 63/035,323, filed June 5, 2020. The contents of the
5 aforementioned applications are hereby incorporated by reference in their entirety.

SEQUENCE LISTING

The instant application contains a Sequence Listing which has been submitted electronically
10 in ASCII format and is hereby incorporated by reference in its entirety. Said ASCII copy, created
on June 12, 2020, is named P2029-7029WO_SL.txt and is 128,635 bytes in size.

BACKGROUND

Multiple myeloma (MM) is a cancer formed by malignant plasma cells. These tumors
15 generally develop in bone, but occasionally are found in other tissues. Disease with a single plasma
cell tumor is known as an isolated (or solitary) plasmacytoma. When more than one plasmacytoma is
present, it is known as multiple myeloma. In the United States, the estimated new cases are about
30,000 in 2017 and more than 10,000 deaths are expected to occur. Despite treatment advances in
multiple myeloma therapy, multiple myeloma remains an incurable disease in most patients.

20 There is a need for developing new approaches for treating, preventing and diagnosing
multiple myeloma and other disorders that share similar disease mechanisms.

SUMMARY

This disclosure provides, at least in part, humanized antibody molecules that bind to CD138,
25 *e.g.*, human CD138, and that comprise one or more properties, *e.g.*, one or more functional,
biophysical, and structural properties disclosed herein. For example, the humanized antibody
molecules described herein can have reduced immunogenicity, greater therapeutic efficacy (*e.g.*,
lower tumor burden and/or increased overall survival), improved target binding (*e.g.*, affinity),
improved *in vitro* or *in vivo* stability, and higher mammalian recombinant expression levels. In an
30 embodiment example, the antibody molecule is capable of causing an effector function (*e.g.*, an
antibody-dependent cellular cytotoxicity (ADCC) activity) on a cell expressing CD138. In an
embodiment example, the antibody molecule preferentially binds to a membrane-bound CD138 versus
a soluble CD138. In an embodiment example, the antibody molecule binds to an epitope in an
extracellular region of CD138 that is proximal to the transmembrane domain. In an
35 embodiment example, the antibody molecule does not bind to the integrin binding domain (IBD) of
CD138. In an embodiment example, the antibody molecule does not bind exclusively to the IBD of
CD138. While not wishing to be bound by theory, it is believed that in

an embodimentexample, improved or optimal cytotoxicity can be achieved, by targeting certain extracellular region(s) on membrane-bound CD138 that is proximal to the cell membrane.

In an embodimentexample, the antibody molecule is selected from **Table 1**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody selected from **Table 1**. In an embodimentexample, the antibody molecule binds to the same or overlapping epitope as the epitope recognized by an anti-CD138 monoclonal antibody selected from **Table 1**. In an embodimentexample, the antibody molecule comprises one or more heavy chain variable regions (VHs) and/or one or more light chain variable regions (VLs) described in **Table 1**. In an embodimentexample, the antibody molecule comprises the heavy chain (HC) and the light chain (LC) described in **Tables 6-8**. In an embodimentexample, the antibody molecule comprises one or more heavy chain CDRs and/or one or more light chain CDRs described in **Tables 1. 7 or 8**.

In an embodimentexample, the antibody molecule comprises a heavy chain variable region (VH) comprising an amino acid sequence selected from **Table 2**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody comprising a VH comprising an amino acid sequence selected from **Table 2**. In an embodimentexample, the antibody molecule comprises a light chain variable region (VL) comprising an amino acid sequence selected from **Table 2**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody comprising a VL comprising an amino acid sequence selected from **Table 2**. In an embodimentexample, the antibody molecule comprises a VH and a VL, each comprising an amino acid sequence selected from **Table 2**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody comprising a VH and a VL, each comprising an amino acid sequence selected from **Table 2**. In an embodimentexample, the antibody molecule binds to the same or overlapping epitope as the epitope recognized by an anti-CD138 monoclonal antibody comprising a VH and/or a VL, each comprising an amino acid sequence selected from **Table 2**. In an embodimentexample, the antibody molecule comprises one or more (*e.g.*, 1, 2, or 3) heavy chain CDRs and/or one or more (*e.g.*, 1, 2, or 3) light chain CDRs described in **Table 2**.

In an embodimentexample, the antibody molecule comprises a heavy chain (HC) comprising an amino acid sequence selected from **Table 6 or 7**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody comprising an HC comprising an amino acid sequence selected from **Table 6 or 7**. In an embodimentexample, the antibody molecule comprises a light chain (LC) comprising an amino acid sequence selected from **Table 6 or 8**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody comprising a LC comprising an amino acid sequence selected from **Table 6 or 8**. In an embodimentexample, the antibody molecule comprises an HC and an LC, each comprising an amino acid sequence selected from **Table 6 or 7** or **Table 6 or 8**, or competes for binding to CD138 with an anti-CD138 monoclonal antibody comprising an HC and an LC, each comprising an amino acid sequence selected from **Table 6 or 7** or **Table 6 or 8**. In an embodimentexample, the antibody molecule binds to the same or overlapping epitope as the epitope recognized by an anti-CD138 monoclonal antibody comprising an HC and/or an LC, each comprising an amino acid sequence selected from **Table 6 or 7**

or **Table 6 or 8**. In an embodiment example, the antibody molecule comprises one or more (*e.g.*, 1, 2, or 3) heavy chain CDRs and/or one or more (*e.g.*, 1, 2, or 3) light chain CDRs described in **Table 7 or 8**.

In an embodiment example, antibody molecule-drug conjugates (ADCs), 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 can be used (alone or in combination with other agents or therapeutic modalities) to treat, prevent and/or diagnose disorders associated with CD138, *e.g.*, cancer or precancerous conditions (*e.g.*, multiple myeloma or smoldering myeloma).

Accordingly, in certain aspect examples, this disclosure provides a humanized antibody molecule, *e.g.*, a humanized antibody molecule described herein, having one or more (*e.g.*, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, or all) of the following properties a)-dd):

- a) Binds to CD138 (*e.g.*, human CD138) with high affinity, *e.g.*, with a dissociation constant (K_D) of less than about 100 nM, typically about 10 nM, and more typically, about 10-0.001 nM, about 10-0.01 nM, about 5-0.01 nM, about 3-0.05 nM, about 1-0.1 nM, or stronger, *e.g.*, less than about 80, 70, 60, 50, 40, 30, 20, 10, 8, 6, 4, 3, 2, 1, 0.5, 0.2, 0.1, 0.05, 0.01, 0.005, or 0.001 nM,
- b) Binds to a membrane-bound CD138 with high affinity, *e.g.*, with a dissociation constant (K_D) of less than about 100 nM, typically about 10 nM, and more typically, about 10-0.001 nM, about 10-0.01 nM, about 5-0.01 nM, about 3-0.05 nM, about 1-0.1 nM, or stronger, *e.g.*, less than about 80, 70, 60, 50, 40, 30, 20, 10, 8, 6, 4, 3, 2, 1, 0.5, 0.2, 0.1, 0.05, 0.01, 0.005, or 0.001 nM,
- c) Binds to a soluble CD138 i) with high affinity, *e.g.*, with a dissociation constant (K_D) of less than about 100 nM, typically about 10 nM, and more typically, about 10-0.001 nM, about 10-0.01 nM, about 5-0.01 nM, about 3-0.05 nM, about 1-0.1 nM, or stronger, *e.g.*, less than about 80, 70, 60, 50, 40, 30, 20, 10, 8, 6, 4, 3, 2, 1, 0.5, 0.2, 0.1, 0.05, 0.01, 0.005, or 0.001 nM; or ii) with low affinity, *e.g.*, with a dissociation constant (K_D) of greater than about 100 nM, *e.g.*, greater than about 200, 300, 400, or 500 nM,
- d) Binds to a membrane-bound CD138, or an intact ectodomain of CD138, i) preferably over a soluble CD138, *e.g.*, the binding affinity to a membrane-bound CD138, or an intact ectodomain of CD138, is at least 2, 3, 4, 5, 6, 7, 8, 9, or 10-fold higher than the binding affinity to a soluble CD138; or ii) with a binding affinity similar to the binding affinity to a soluble CD138, *e.g.*, the binding affinity to a membrane-bound CD138, or an intact ectodomain of CD138, is less than about 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, or 100% higher than the binding affinity to a soluble CD138,

- bb) Has one or more biological properties of a humanized anti-CD138 monoclonal antibody described herein,
- cc) Has one or more structural properties of a humanized anti-CD138 monoclonal antibody described herein, or
- 5 dd) Has one or more pharmacokinetic properties of a humanized anti-CD138 monoclonal antibody described herein.

In an aspect, the disclosure features a humanized anti-CD138 antibody molecule comprising one or both of:

- 10 (a) a heavy chain variable region (VH), wherein the VH comprises three heavy chain complementarity determining regions (HCDR1, HCDR2, and HCDR3), wherein the VH comprises one, two, or all of the following: (i) an HCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR1 of an anti-CD138 monoclonal antibody described herein (*e.g.*,
15 any of antibodies 3820, 3821, 3826, 4221, 4226, 4320, 4321, 4322, 4326, 4421, 4520, 4521, 4526, 3522, 3621, 3822, 3825, or 4422, *e.g.*, as listed in **Table 1 or 2**; (ii) an HCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR2 of the anti-CD138 antibody; or (iii) an HCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino
20 acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR3 of the anti-CD138 antibody; or

- (b) a light chain variable region (VL), wherein the VL comprises three light chain complementarity determining regions (LCDR1, LCDR2, and LCDR3), wherein the VL comprises one, two, or all of the following: (i) an LCDR1 comprising an amino acid sequence that differs by no
25 more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR1 of the anti-CD138 antibody; (ii) an LCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR2 of the anti-CD138 antibody; or (iii) an LCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3
30 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

In an aspect, the disclosure features an anti-CD138 antibody molecule comprising: (I) (a) a heavy chain variable region (VH), wherein the VH comprises three heavy chain complementarity determining regions (HCDR1, HCDR2, and HCDR3), wherein the VH comprises one, two, or all of: (i) an HCDR1 comprising an amino acid sequence of G-Y-N/S/T-F-A/S/T-S-Y (SEQ ID NO: 438); (ii) an HCDR2 comprising an amino acid sequence of H-P-S-D-S-T (SEQ ID NO: 351); or (iii) an HCDR3 comprising an amino acid sequence of F-V-Y (SEQ ID NO: 508); and (b) a light chain

variable region (VL), wherein the VL comprises three light chain complementarity determining regions (LCDR1, LCDR2, and LCDR3), wherein the VL comprises one, two, or all of: (i) an LCDR1 comprising an amino acid sequence of K/R-A/S-S-K/Q-S-L-L-Y-K-D-G-K-T-Y-L-N (SEQ ID NO: 522); (ii) an LCDR2 comprising an amino acid sequence of V-L/V-S-S/T-L/R-A/Q-S (SEQ ID NO: 523); or (iii) an LCDR3 comprising an amino acid sequence of Q-Q-L-V-E/Q-Y-P-Y-T (SEQ ID NO: 524); or (II) (a) a heavy chain variable region (VH), wherein the VH comprises three heavy chain complementarity determining regions (HCDR1, HCDR2, and HCDR3), wherein the VH comprises one, two, or all of: (i) an HCDR1 comprising an amino acid sequence of S-Y-Y-I/M-H (SEQ ID NO: 525); (ii) an HCDR2 comprising an amino acid sequence of T-I-H-P-S-D-S-T-A/T-N-Y-A/N-Q-K-F-K/Q-G (SEQ ID NO: 526); or (iii) an HCDR3 comprising an amino acid sequence of F-V-Y (SEQ ID NO: 508); and (b) a light chain variable region (VL), wherein the VL comprises three light chain complementarity determining regions (LCDR1, LCDR2, and LCDR3), wherein the VL comprises one, two, or all of: (i) an LCDR1 comprising an amino acid sequence of K/R-A/S-S-K/Q-S-L-L-Y-K-D-G-K-T-Y-L-N (SEQ ID NO: 522); (ii) an LCDR2 comprising an amino acid sequence of V-L/V-S-S/T-L/R-A/Q-S (SEQ ID NO: 523); or (iii) an LCDR3 comprising an amino acid sequence of Q-Q-L-V-E/Q-Y-P-Y-T (SEQ ID NO: 524).

- In an ~~embodiment~~ example, the VH comprises: (i) an HCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR1 of the anti-CD138 antibody; (ii) an HCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR2 of the anti-CD138 antibody; and (iii) an HCDR3 comprising an amino acid sequence that differs by no more
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than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR3 of the anti-CD138 antibody.

In an ~~embodiment~~ example, the VH comprises: (i) an HCDR1 comprising the amino acid sequence of the HCDR1 of the anti-CD138 antibody; (ii) an HCDR2 comprising the amino acid sequence of the HCDR2 of the anti-CD138 antibody; and (iii) an HCDR3 comprising the amino acid sequence of the HCDR3 of the anti-CD138 antibody.

In an ~~embodiment~~ example, the VL comprises: (i) an LCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR1 of the anti-CD138 antibody; (ii) an LCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR2 of the anti-CD138 antibody; and (iii) an LCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

In an ~~embodiment~~ example, the VL comprises: (i) an LCDR1 comprising the amino acid sequence of the LCDR1 of the anti-CD138 antibody; (ii) an LCDR2 comprising the amino acid sequence of the LCDR2 of the anti-CD138 antibody; and (iii) an LCDR3 comprising the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

In an ~~embodiment~~ example, the antibody molecule comprises:

(a) a VH comprising: (i) an HCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR1 of the anti-CD138 antibody; (ii) an HCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR2 of the anti-CD138 antibody; and (iii) an HCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR3 of the anti-CD138 antibody, and

(b) a VL comprising: (i) an LCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR1 of the anti-CD138 antibody; (ii) an LCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR2 of the anti-CD138 antibody; and (iii) an LCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

In an ~~embodiment~~ example, the antibody molecule comprises: (a) a VH comprising: (i) an HCDR1 comprising the amino acid sequence of the HCDR1 of the anti-CD138 antibody; (ii) an HCDR2

comprising the amino acid sequence of the HCDR2 of the anti-CD138 antibody; and (iii) an HCDR3 comprising the amino acid sequence of the HCDR3 of the anti-CD138 antibody, and (b) a VL comprising: (i) an LCDR1 comprising the amino acid sequence of the LCDR1 of the anti-CD138 antibody; (ii) an LCDR2 comprising the amino acid sequence of the LCDR2 of the anti-CD138 antibody; and (iii) an LCDR3 comprising the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

In an ~~embodiment~~example, the VH comprises an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VH of the anti-CD138 antibody. In an ~~embodiment~~example, the antibody molecule the VH comprises the amino acid sequence of the VH of the anti-CD138 antibody.

In an ~~embodiment~~example, the VL comprises an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VL of the anti-CD138 antibody. In an ~~embodiment~~example, the VL comprises the amino acid sequence of the VL of the anti-CD138 antibody.

In an ~~embodiment~~example, (a) the VH comprises an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VH of the anti-CD138 antibody; and (b) the VL comprises an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VL of the anti-CD138 antibody.

In an ~~embodiment~~example, the VH comprises the amino acid sequence of the VH of the anti-CD138 antibody and the VL comprises the amino acid sequence of the VL of the anti-CD138 antibody.

In an ~~embodiment~~example, the antibody molecule comprises an Fc region (*e.g.*, an Fc region described herein). In an ~~embodiment~~example, the antibody molecule comprises a heavy chain constant region of IgG, *e.g.*, IgG1. In an ~~embodiment~~example, the antibody molecule comprises a light chain constant region of kappa.

In an ~~embodiment~~example, the antibody molecule comprises a heavy chain (HC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HC of the anti-CD138 antibody. In an ~~embodiment~~example, the HC comprises the amino acid sequence of the HC of the anti-CD138 antibody.

In an ~~embodiment~~example, the antibody molecule comprises a light chain (LC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LC of the anti-CD138 antibody. In an ~~embodiment~~example, the LC comprises the amino acid sequence of the LC of the anti-CD138 antibody.

In an ~~embodiment~~example, the antibody molecule comprises (a) a heavy chain (HC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HC of the anti-CD138 antibody; and (b) a light chain (LC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LC of the anti-CD138 antibody. In an ~~embodiment~~example, the HC comprises the amino acid sequence of the HC of the anti-CD138 antibody and the LC comprises the amino acid sequence of the LC of the anti-CD138 antibody.

In an ~~embodiment~~example, the antibody molecule comprises (a) a heavy chain (HC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of SEQ ID NO: 527; and/or (b) a light chain (LC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of SEQ ID NO: 528. In an ~~embodiment~~example, the HC comprises the amino acid sequence of SEQ ID NO: 527 or the LC comprises the amino acid sequence of SEQ ID NO: 528. In an ~~embodiment~~example, the HC comprises the amino acid sequence of SEQ ID NO: 527 and the LC comprises the amino acid sequence of SEQ ID NO: 528.

In an aspect, the disclosure features an antibody molecule, which competes for binding to CD138 with a humanized anti-CD138 monoclonal antibody described herein (*e.g.*, any of antibodies 3820, 3821, 3826, 4221, 4226, 4320, 4321, 4322, 4326, 4421, 4520, 4521, 4526, 3522, 3621, 3822, 3825, or 4422).

In an aspect, the disclosure features an antibody molecule, which binds, or substantially binds, to an epitope that completely or partially overlaps with the epitope of a humanized anti-CD138 monoclonal antibody described herein (*e.g.*, any of antibodies 3820, 3821, 3826, 4221, 4226, 4320, 4321, 4322, 4326, 4421, 4520, 4521, 4526, 3522, 3621, 3822, 3825, or 4422).

In an aspect, the disclosure features an antibody-molecule drug conjugate (ADC) comprising a humanized antibody molecule described herein, optionally comprising a cytotoxic agent, further optionally comprising a linker.

In an aspect, the disclosure features a composition comprising an antibody molecule as disclosed herein, or an ADC as disclosed herein, optionally, wherein the composition is a pharmaceutical composition; optionally wherein the composition further comprises a pharmaceutically acceptable carrier. In an ~~aspect~~example, the disclosure features a composition comprising a humanized antibody molecule described herein, or an ADC described herein, optionally, wherein the composition is a pharmaceutical composition.

In an ~~embodiment~~example, the composition further comprises a pharmaceutically acceptable carrier.

In an aspect, the disclosure features a nucleic acid molecule encoding a heavy chain variable region (VH), a light chain variable region (VL), or both, of a humanized antibody molecule described herein.

In an aspect, the disclosure features a vector comprising a nucleic acid molecule described herein.

In an aspect, the disclosure features a cell comprising a nucleic acid molecule described herein or a vector described herein, optionally, wherein the cell is an isolated cell.

5 In an aspect, the disclosure features a kit comprising a humanized antibody molecule described herein, an ADC described herein, or a composition described herein, and instructions to use of the antibody molecule or composition.

In an aspect, the disclosure features a container comprising a humanized antibody molecule described herein, an ADC described herein, or a composition described herein.

In an aspect, the disclosure features a method of producing an anti-CD138 antibody molecule, the method comprising culturing a cell as disclosed herein under conditions that allow production of an antibody molecule, thereby producing the antibody molecule; optionally wherein the method further comprises isolating or purifying the antibody molecule. In an aspectexample, the disclosure features a method of producing a humanized anti-CD138 antibody molecule, the method comprising culturing a cell described herein under conditions that allow production of a humanized antibody molecule, thereby producing the antibody molecule.

10 In an embodimentexample, the method further comprises isolating or purifying the antibody molecule.

In an aspect, the disclosure features the use of an antibody molecule as disclosed herein, an ADC as disclosed herein, or a composition as disclosed herein, in the manufacture of a medicament for treating a cancer in a subject. In an aspectexample, the disclosure features a humanized antibody molecule of described herein, an ADC described herein, or a composition described herein, for use in a method of treating a cancer in a subject.

15 In an embodimentexample, the cancer is a hematological cancer. In an embodimentexample, the cancer is a multiple myeloma. In an embodimentexample, the cancer is a solid tumor, *e.g.*, a solid tumor described herein. In an embodimentexample, the antibody molecule reduces tumor burden in a subject, *e.g.*, a subject having multiple myeloma.

20 In an embodimentexample, the antibody molecule, ADC, or composition is administered to the subject intravenously. In an embodimentexample, the antibody molecule is administered to the subject intraperitoneally.

In an embodimentexample, the antibody molecule, ADC, or composition is administered to the subject at a dose between 0.1 mg/kg and 50 mg/kg, between 0.2 mg/kg and 25 mg/kg, between 0.5 mg/kg and 10 mg/kg, between 0.5 mg/kg and 5 mg/kg, between 0.5 mg/kg and 3 mg/kg, between 0.5 mg/kg and 2.5 mg/kg, between 0.5 mg/kg and 2 mg/kg, between 0.5 mg/kg and 1.5 mg/kg, between 0.5 mg/kg and 1 mg/kg, between 1 mg/kg and 1.5 mg/kg, between 1 mg/kg and 2 mg/kg, between 1 mg/kg and 2.5 mg/kg, between 1 mg/kg and 3 mg/kg, between 1 mg/kg and 2.5 mg/kg, or between 1 mg/kg and 5 mg/kg. In an embodimentexample, the antibody molecule, ADC, or composition is administered at a dose of between 1 and 50 mg/kg, *e.g.*, between 1 and 40 mg/kg, between 1 mg/kg and 30 mg/kg, between 1 mg/kg and 20 mg/kg, between 1 mg/kg and 10 mg/kg, or between 1 mg/kg and 5 mg/kg. In an embodimentexample, the antibody molecule is administered at a dose of about 4 mg/kg, *e.g.*, about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, or 20 mg/kg.

In an embodimentexample, the antibody molecule, ADC, or composition is administered to the subject at a fixed dose between 10 mg and 1000 mg, between 10 mg and 500 mg, between 10 mg and 250 mg, between 10 mg and 150 mg, between 10 mg and 100 mg, between 10 mg and 50 mg, between 250 mg and 500 mg, between 150 mg and 500 mg, between 100 mg and 500 mg, between 50 mg and 500 mg, between 25 mg and 250 mg, between 50 mg and 150 mg, between 50 mg and 100 mg, between 100 mg and 150 mg, between 100 mg and 200 mg, or between 150 mg and 250 mg.

In an embodimentexample, the antibody molecule, ADC, or composition is administered once a week, twice a week, once every two weeks, once every three weeks, or once every four weeks.

In an embodimentexample, the use further comprises determining the level of CD138 in a sample from the subject. In an embodimentexample, the use further comprises administering to the subject a second therapy for cancer.

In an aspect, the disclosure features the use of an antibody molecule as disclosed herein, an ADC as disclosed herein, or a composition as disclosed herein, in the manufacture of a medicament for treating a precancerous condition or preventing a cancer; optionally wherein: (i) the precancerous condition is smoldering myeloma or monoclonal gammopathy of undetermined significance (MGUS); or (ii) the cancer is multiple myeloma. In an aspectexample, the disclosure features a humanized antibody molecule described herein, an ADC described herein, or a composition described herein, for use in a method of treating a precancerous condition or preventing a cancer.

In an embodimentexample, the precancerous condition is smoldering myeloma or monoclonal gammopathy of undetermined significance (MGUS). In an embodimentexample, the cancer is multiple myeloma.

In an aspect, the disclosure features the use of an antibody molecule as disclosed herein, an ADC as disclosed herein, or a composition as disclosed herein in the manufacture of a medicament for causing ADCC activity in a cell or subject. In an aspectexample, the disclosure features a method of causing an ADCC activity, the method comprising contacting a cell or subject a humanized antibody molecule described herein, an ADC described herein, or a composition described herein, thereby causing the ADCC activity.

In an aspectexample, the disclosure features a method of treating a cancer, the method comprising administering to a subject in need thereof an effective amount of a humanized antibody molecule described herein, an ADC described herein, or a composition described herein, thereby treating the cancer.

In an aspectexample, the disclosure features a method of treating a precancerous condition or preventing a cancer, the method comprising administering to a subject in need thereof an effective amount of a humanized antibody molecule described herein, an ADC described herein, or a composition described herein, thereby treating the precancerous condition or preventing the cancer.

In an aspect, the disclosure features a method of detecting an anti-CD138 molecule, the method comprising contacting a cell or a subject with an antibody molecule as disclosed herein, thereby detecting the CD138 molecule; optionally wherein: (i) the antibody molecule is coupled with a detectable label; and/or (ii) the CD138 molecule is detected *in vitro* or *ex vivo*. In an aspectexample, the disclosure features, a method of detecting an anti-CD138 molecule, the method comprising contacting a cell or a subject with a humanized antibody molecule described herein, thereby detecting the CD138 molecule.

In an embodimentexample, the antibody molecule is coupled with a detectable label. In an embodimentexample, the CD138 molecule is detected *in vitro*, *ex vivo*, or *in vivo*.

The disclosure contemplates all combinations of any one or more of the foregoing aspectexamples and/or embodimentexamples, as well as combinations with any one or more of the embodimentexamples set forth in the detailed description and examples.

What is claimed is:

1. An anti-CD138 antibody molecule comprising:

(a) a heavy chain variable region (VH), wherein the VH comprises three heavy chain complementarity determining regions (HCDR1, HCDR2, and HCDR3), wherein the VH comprises:

(i) an HCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR1 of any of antibodies 3820, 3821, 3826, 4221, 4226, 4320, 4321, 4322, 4326, 4421, 4520, 4521, 4526, 3522, 3621, 3822, 3825, or 4422;

(ii) an HCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR2 of the anti-CD138 antibody; and

(iii) an HCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HCDR3 of the anti-CD138 antibody; and

(b) a light chain variable region (VL), wherein the VL comprises three light chain complementarity determining regions (LCDR1, LCDR2, and LCDR3), wherein the VL comprises:

(i) an LCDR1 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR1 of the anti-CD138 antibody;

(ii) an LCDR2 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR2 of the anti-CD138 antibody; and

(iii) an LCDR3 comprising an amino acid sequence that differs by no more than 1, 2, or 3 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

2. The antibody molecule of claim 1, comprising:

(a) a VH comprising: (i) an HCDR1 comprising the amino acid sequence of the HCDR1 of the anti-CD138 antibody; (ii) an HCDR2 comprising the amino acid sequence of the HCDR2 of the anti-CD138 antibody; and (iii) an HCDR3 comprising the amino acid sequence of the HCDR3 of the anti-CD138 antibody, and

(b) a VL comprising: (i) an LCDR1 comprising the amino acid sequence of the LCDR1 of the anti-CD138 antibody; (ii) an LCDR2 comprising the amino acid sequence of the LCDR2 of the anti-CD138 antibody; and (iii) an LCDR3 comprising the amino acid sequence of the LCDR3 of the anti-CD138 antibody.

3. The antibody molecule of claim 1 or 2, wherein:

(I) the VH comprises:

(i) an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VH of the anti-CD138 antibody;

~~4. The antibody molecule of any of claims 1-3, wherein the VH comprises; and/or~~

~~(ii) the amino acid sequence of the VH of the anti-CD138 antibody;~~

~~5. The antibody molecule of any of claims 1-4, wherein:~~

(II) the VL comprises:

(i) an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VL of the anti-CD138 antibody;

~~6. The antibody molecule of any of claims 1-5, wherein the VL; and/or~~

~~(ii) comprises the amino acid sequence of the VL of the anti-CD138 antibody.~~

~~7. The antibody molecule of any of claims 1-6, wherein:~~

~~(a) the VH comprises an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VH of the anti-CD138 antibody; and~~

~~(b) the VL comprises an amino acid sequence that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the VH of the anti-CD138 antibody.~~

~~8. The antibody molecule of any of claims 1-7, wherein the VH comprises the amino acid sequence of the VH of the anti-CD138 antibody and the VL comprises the amino acid sequence of the VL of the anti-CD138 antibody.~~

~~94.~~ The antibody molecule of any of claims ~~1-83~~, comprising:

~~(i) an Fc region;~~

~~10.~~ The antibody molecule of any of claims ~~1-9~~, comprising

~~(ii) a heavy chain (HC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HC of the anti-CD138 antibody;~~

~~11.~~ The antibody molecule of claim ~~10~~, wherein the HC comprises the amino acid sequence of the HC of the anti-CD138 antibody.

~~12.~~ The antibody molecule of any of claims ~~1-11~~, comprising: and/or

~~(iii) a light chain (LC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LC of the anti-CD138 antibody.~~

~~13.~~ The antibody molecule of claim ~~12~~, wherein the LC comprises the amino acid sequence of the LC of the anti-CD138 antibody.

~~14.~~ The antibody molecule of any of claims ~~1-13~~, comprising:

~~(a) a heavy chain (HC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the HC of the anti-CD138 antibody; and~~

~~(b) a light chain (LC) comprising an amino acid sequence of that differs by no more than 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 amino acid residues from, or has at least 85, 90, 95, 99 or 100% homology with, the amino acid sequence of the LC of the anti-CD138 antibody.~~

~~15.~~ The antibody molecule of claim ~~14~~, wherein the HC comprises the amino acid sequence of the HC of the anti-CD138 antibody and the LC comprises the amino acid sequence of the LC of the anti-CD138 antibody.

~~165.~~ An anti-CD138 antibody molecule comprising:

(I) (a) a heavy chain variable region (VH), wherein the VH comprises three heavy chain complementarity determining regions (HCDR1, HCDR2, and HCDR3), wherein the VH comprises one, two, or all of: (i) an HCDR1 comprising an amino acid sequence of G-Y-N/S/T-F-A/S/T-S-Y (SEQ ID NO: 438); (ii) an HCDR2 comprising an amino acid sequence of H-P-S-D-S-T (SEQ ID NO: 351); or (iii) an HCDR3 comprising an amino acid sequence of F-V-Y (SEQ ID NO: 508); and

(b) a light chain variable region (VL), wherein the VL comprises three light chain complementarity determining regions (LCDR1, LCDR2, and LCDR3), wherein the VL comprises one, two, or all of: (i) an LCDR1 comprising an amino acid sequence of K/R-A/S-S-K/Q-S-L-L-Y-K-D-G-K-T-Y-L-N (SEQ ID NO: 522); (ii) an LCDR2 comprising an amino acid sequence of V-L/V-S-S/T-L/R-A/Q-S (SEQ ID NO: 523); or (iii) an LCDR3 comprising an amino acid sequence of Q-Q-L-V-E/Q-Y-P-Y-T (SEQ ID NO: 524); or

(II) (a) a heavy chain variable region (VH), wherein the VH comprises three heavy chain complementarity determining regions (HCDR1, HCDR2, and HCDR3), wherein the VH comprises one, two, or all of: (i) an HCDR1 comprising an amino acid sequence of S-Y-Y-I/M-H (SEQ ID NO: 525); (ii) an HCDR2 comprising an amino acid sequence of T-I-H-P-S-D-S-T-A/T-N-Y-A/N-Q-K-F-K/Q-G (SEQ ID NO: 526); or (iii) an HCDR3 comprising an amino acid sequence of F-V-Y (SEQ ID NO: 508); and

(b) a light chain variable region (VL), wherein the VL comprises three light chain complementarity determining regions (LCDR1, LCDR2, and LCDR3), wherein the VL comprises one, two, or all of: (i) an LCDR1 comprising an amino acid sequence of K/R-A/S-S-K/Q-S-L-L-Y-K-D-G-K-T-Y-L-N (SEQ ID NO: 522); (ii) an LCDR2 comprising an amino acid sequence of V-L/V-S-S/T-L/R-A/Q-S (SEQ ID NO: 523); or (iii) an LCDR3 comprising an amino acid sequence of Q-Q-L-V-E/Q-Y-P-Y-T (SEQ ID NO: 524).

~~176.~~ The antibody molecule of any of claims 1-~~165~~, comprising:

~~(i) two VHs and two VLs; and/or~~

~~(ii) one or more framework regions derived from human framework germline sequence.~~

~~187.~~ The antibody molecule of any of claims 1-~~176~~, which is:

~~(i) a synthetic antibody molecule or an isolated antibody molecule.~~

~~19.~~ The antibody molecule of any of claims 1-~~18~~, which is:

~~(ii) a monovalent antibody molecule, a multivalent (e.g., bivalent, trivalent, or tetravalent) antibody molecule, a monospecific molecule, or a multispecific (e.g., bispecific, trispecific, or tetraspecific) antibody molecule.~~

~~20. The antibody molecule of any of claims 1-19, which is:~~

~~(iii) a humanized antibody molecule; and/or~~

~~(iv) an IgG antibody.~~

~~21. The antibody molecule of any of claims 1-20, comprising one or more framework regions derived from human framework germline sequence.~~

~~22. The antibody molecule of any of claims 1-21, which is an IgG antibody.~~

~~238. The antibody molecule of any of claims 1-227, comprising:~~

~~(i) a heavy chain constant region of IgG chosen from IgG1, IgG2, IgG3, or IgG4.~~

~~24. The antibody molecule of any of claims 1-23, comprising:~~

~~(ii) a light chain constant region of kappa or lambda light chain.~~

~~25. The antibody molecule of any of claims 1-24, comprising:~~

~~(iii) an Fc region comprising one or more mutations to increase the binding affinity to neonatal receptor FcRn and/or the half-life of the antibody molecule.~~

~~26. The antibody molecule of any of claims 1-25, comprising: and/or~~

~~(iv) an Fc region comprising one or more mutations described herein, e.g., to increase one or more of half-life, ADCC, CDC, or ADCP.~~

~~279. An antibody molecule, which competes for binding to CD138 with any of antibodies 3820, 3821, 3826, 4221, 4226, 4320, 4321, 4322, 4326, 4421, 4520, 4521, 4526, 3522, 3621, 3822, 3825, or 4422.~~

~~2810. An antibody molecule, which binds, or substantially binds, to an epitope that completely or partially overlaps with the epitope of any of antibodies 3820, 3821, 3826, 4221, 4226, 4320, 4321, 4322, 4326, 4421, 4520, 4521, 4526, 3522, 3621, 3822, 3825, or 4422.~~

~~2911. An antibody-molecule drug conjugate (ADC) comprising an antibody molecule of any of claims 1-2810, optionally comprising a cytotoxic agent, further optionally comprising a linker.~~

~~30~~12. A composition comprising an antibody molecule of any of claims 1-~~28~~10, or an ADC of claim ~~29~~11, optionally, wherein the composition is a pharmaceutical composition;

optionally wherein the composition further comprises a pharmaceutically acceptable carrier.

~~31. The composition of claim 30, further comprising a pharmaceutically acceptable carrier.~~

~~32~~13. A nucleic acid molecule encoding a heavy chain variable region (VH), a light chain variable region (VL), or both, of an antibody molecule of any of claims 1-~~28~~10.

~~33~~14. A vector comprising a nucleic acid molecule of claim ~~32~~13.

~~34~~15. A cell comprising a nucleic acid molecule of claim ~~32~~13 or a vector of claim ~~33~~14, optionally, wherein the cell is an isolated cell.

~~35~~16. A kit comprising an antibody molecule of any of claims 1-~~28~~10, an ADC of claim ~~29~~11, or a composition of claim ~~30~~ ~~or~~ ~~31~~12, and instructions to use of the antibody molecule or composition.

~~36~~17. A container comprising an antibody molecule of any of claims 1-~~28~~10, an ADC of claim ~~29~~11, or a composition of claim ~~30~~ ~~or~~ ~~31~~12.

~~37~~18. A method of producing an anti-CD138 antibody molecule, the method comprising culturing a cell of claim ~~34~~15 under conditions that allow production of an antibody molecule, thereby producing the antibody molecule;

optionally wherein the method further comprises isolating or purifying the antibody molecule.

~~38. The method of claim 37, further comprising isolating or purifying the antibody molecule.~~

~~39~~19. ~~Use of an~~An antibody molecule of any of claims 1-~~28~~10, an ADC of claim ~~29~~11, or a composition of claim ~~30~~ ~~or~~ ~~31~~12, ~~for use in~~ the manufacture of a medicament for a method of treating a cancer in a subject.

~~40~~20. ~~The antibody molecule, ADC, or composition for use of claim 39~~19, wherein:

(i) the cancer is a hematological cancer.

~~41. The antibody molecule, ADC, or composition for use of claim 39 or 40, wherein:~~

~~(ii) the cancer is a multiple myeloma;~~

~~42. The antibody molecule, ADC, or composition for use of claim 39, wherein: or~~

~~(iii) the cancer is a solid tumor, e.g., a solid tumor described herein;~~

~~43. The antibody molecule, ADC, or composition for use of any of claims 39-42, wherein:~~

~~optionally wherein the antibody molecule, ADC, or composition is to be administered to the subject intravenously.~~

~~4421. The antibody molecule, ADC, or composition for use of any of claims 39-43 claim 19 or 20,~~
wherein:

~~(i) the antibody molecule, ADC, or composition is to be administered to the subject at a dose between 0.1 mg/kg and 50 mg/kg, between 0.2 mg/kg and 25 mg/kg, between 0.5 mg/kg and 10 mg/kg, between 0.5 mg/kg and 5 mg/kg, between 0.5 mg/kg and 3 mg/kg, between 0.5 mg/kg and 2.5 mg/kg, between 0.5 mg/kg and 2 mg/kg, between 0.5 mg/kg and 1.5 mg/kg, between 0.5 mg/kg and 1 mg/kg, between 1 mg/kg and 1.5 mg/kg, between 1 mg/kg and 2 mg/kg, between 1 mg/kg and 2.5 mg/kg, between 1 mg/kg and 3 mg/kg, between 1 mg/kg and 2.5 mg/kg, or between 1 mg/kg and 5 mg/kg;~~

~~45. The antibody molecule, ADC, or composition for use of any of claims 39-44, wherein:~~

~~(ii) the antibody molecule, ADC, or composition is to be administered to the subject at a fixed dose between 10 mg and 1000 mg, between 10 mg and 500 mg, between 10 mg and 250 mg, between 10 mg and 150 mg, between 10 mg and 100 mg, between 10 mg and 50 mg, between 250 mg and 500 mg, between 150 mg and 500 mg, between 100 mg and 500 mg, between 50 mg and 500 mg, between 25 mg and 250 mg, between 50 mg and 150 mg, between 50 mg and 100 mg, between 100 mg and 150 mg, between 100 mg and 200 mg, or between 150 mg and 250 mg;~~

~~46. The antibody molecule, ADC, or composition for use of any of claims 39-45, wherein: and/or~~

~~(iii) the antibody molecule, ADC, or composition is to be administered once a week, twice a week, once every two weeks, once every three weeks, or once every four weeks.~~

~~4722. The antibody molecule, ADC, or composition for use of any of claims 3919-4621, further comprising:~~

(i) determining the level of CD138 in a sample from the subject.

~~48. The antibody molecule, ADC, or composition for use of any of claims 39-47, further comprising; and/or~~

~~(ii) administering to the subject that a second therapy for cancer is to be administered to the subject.~~

~~4923. An Use of an antibody molecule of any of claims 1-2810, an ADC of claim 2911, or a composition of claim 30 or 3112, for use in the manufacture of a medicament for a method of treating a precancerous condition or preventing a cancer.~~

~~50. The antibody molecule, ADC, or composition for use of claim 49, optionally wherein;~~

~~(i) the precancerous condition is smoldering myeloma or monoclonal gammopathy of undetermined significance (MGUS);~~

~~51. The antibody molecule, ADC, or composition for use of claim 49, wherein; or~~

~~(ii) the cancer is multiple myeloma.~~

~~5224. A method of causing an ADCC activity, the method comprising contacting a cell or subject Use of an antibody molecule of any of claims 1-2810, an ADC of claim 2910, or a composition of claim 12 30 or 31, thereby causing the in the manufacture of a medicament for causing ADCC activity in a cell or subject.~~

~~53. A method of treating a cancer, the method comprising administering to a subject in need thereof an effective amount of an antibody molecule of any of claims 1-28, an ADC of claim 29, or a composition of claim 30 or 31, thereby treating the cancer.~~

~~54. A method of treating a precancerous condition or preventing a cancer, the method comprising administering to a subject in need thereof an effective amount of an antibody molecule of any of claims 1-28, an ADC of claim 29, or a composition of claim 30 or 31, thereby treating the precancerous condition or preventing the cancer.~~

~~55~~25. A method of detecting an anti-CD138 molecule, the method comprising contacting a cell or a subject with an antibody molecule of any of claims 1-~~28~~10, thereby detecting the CD138 molecule.

~~56. The method of claim 55;~~

optionally wherein:

(i) the antibody molecule is coupled with a detectable label.

~~57. The method of claim 55 or 56, wherein; and/or~~

(ii) the CD138 molecule is detected *in vitro*, or *ex vivo*, ~~or *in vivo*.~~

~~58~~26. The ~~antibody molecule, ADC, or composition for use of any of claims 39~~19-51~~24, or the method of claim 53 or 54, wherein the antibody molecule is used or is to be~~ administered in combination with a second therapeutic agent or modality.

~~59. The antibody molecule, ADC, or composition for use of claim 58, or the method of claim 58,~~

;

optionally wherein the second therapeutic agent or modality comprises a proteasome inhibitor.

~~60. The antibody molecule, ADC, or composition for use of claim 59, or the method of claim 59,~~
further optionally wherein the proteasome inhibitor comprises bortezomib.