CLAIMS

1. A method of identifying a compound that modulates β-catenin depots in a cell, the method comprising:
   (a) contacting a composition comprising the cell with the compound;
   (b) assaying the composition comprising the cell, or a derivative of the composition, for the β-catenin depots; and
   (c) identifying the compound that modulates β-catenin depots in the cell by comparison of the assayed β-catenin depots in the cell to a reference.

2. The method of claim 1, wherein comparison of the assayed β-catenin depots in the cell to the reference is based on one or more of the following attributes of the β-catenin depots:
   (i) presence of the β-catenin depots;
   (ii) number of the β-catenin depots;
   (iii) size of the β-catenin depots;
   (iv) surface area of the β-catenin depots;
   (v) cellular location of the β-catenin depots;
   (vi) distribution of the β-catenin depots;
   (vii) ratio of the amount of the β-catenin depots and a reference condensate; or
   (viii) composition of the β-catenin depots.

3. The method of claim 1 or 2, wherein: (a) modulation of the β-catenin depots is based on increasing the β-catenin depots in the cell as compared to the reference; or (b) modulation of the β-catenin depots is based on an increase in the number of the β-catenin depots in the cell as compared to the reference, optionally wherein the modulation of the β-catenin depots is based on an increase in the number of the β-catenin depots in the nucleus of the cell as compared to the reference.

4. The method of any one of claims 1-3, wherein the assaying for the β-catenin depots comprises detecting an inactive form of a β-catenin polypeptide.

5. The method of claim 4, wherein the detecting the inactive form of the β-catenin polypeptide comprises contacting the composition comprising the cell, or the derivative of the composition, with a detectable reagent that specifically recognizes the inactive

form of the β-catenin polypeptide, optionally wherein the detectable reagent is an antibody specifically recognizing the inactive form of the β-catenin polypeptide, optionally wherein the assaying comprises detecting the detectable reagent that specifically recognizes the inactive form of the β-catenin polypeptide, and optionally wherein the detecting comprises imaging at least a portion of the cell.

6. The method of claim 5, wherein the detectable reagent that specifically recognizes the inactive form of the β-catenin polypeptide: (i) is a fluorescently labeled antibody specifically recognizing the inactive form of the β-catenin polypeptide, or (ii) is detected using a fluorescently labeled secondary antibody that specifically recognizes the detectable reagent.

7. The method of claim 5 or 6, wherein the detectable reagent that specifically recognizes the inactive form of the β-catenin polypeptide specifically recognizes a phosphorylation at one or more of S33, S37, T41, or S45 of the β-catenin polypeptide, wherein the amino acid position is relative to amino acid sequence of SEQ ID NO:1, optionally wherein the detectable reagent specifically recognizes a phosphorylation at T41 and/or S45, further optionally wherein the detectable reagent specifically recognizes phosphorylations at T41 and S45, and optionally wherein the detectable reagent is a 23H16L13 antibody clone.

8. The method of any one of claims 1-7, wherein the comparison of the assayed β-catenin depots in the cell to the reference is based on one or more of the following attributes of an inactive form of a β-catenin polypeptide associated with the β-catenin depots:
   (i) location of the inactive form of the β-catenin polypeptide;
   (ii) amount of the inactive form of the β-catenin polypeptide;
   (iii) distribution of the inactive form of the β-catenin polypeptide;
   (iv) condensate partitioning of the inactive form of the β-catenin polypeptide into the β-catenin depots and/or one or more other condensates;
   (v) a functional activity associated with the inactive form of the β-catenin polypeptide;
   (vi) aggregation of the inactive form of the β-catenin polypeptide;
   (vii) post-translational modification status of the inactive form of the β-catenin polypeptide; or

(viii) amount of a degradation product of the inactive form of the β-catenin polypeptide.

9. The method of claim 8, wherein modulation of the β-catenin depots in the cell is based on an increase in the amount of the inactive form of the β-catenin polypeptide in the β-catenin depots as compared to the reference.

10. The method of any one of claims 1-9, wherein the assaying for the β-catenin depots comprises detecting a phospho-H2A.X (P-2A.X) and/or a mediator of DNA damage checkpoint protein 1 (MDC1).

11. The method of any one of claims 1-10, wherein the cell is a model for aberrant Wnt/β-catenin signaling, a proliferative pathology, and/or a cancer.

12. The method of any one of claims 1-11, wherein the cell is a cancer cell, optionally wherein the cancer cell is a human osteosarcoma U2OS cell or a human colon adenocarcinoma DLD-1 cell.

13. The method of any one of claims 1-12, wherein the inactive form of the β-catenin polypeptide is a wildtype β-catenin polypeptide.

14. The method of any one of claims 1-12, wherein the inactive form of the β-catenin polypeptide is a mutant β-catenin polypeptide.

15. The method of any one of claims 1-14, wherein the assaying further comprises one or more of: (i) contacting the composition comprising the cell, or the derivative of the composition, with a second detectable reagent that specifically recognizes an active form of a β-catenin polypeptide comprising a phosphorylation at S552 and/or S675, and wherein the amino acid position is relative to amino acid sequence of SEQ ID NO:1; (ii) contacting the composition comprising the cell, or the derivative of the composition, with a fixative agent before the assaying of step (b); (iii) subjecting the composition comprising the cell to a condition that promotes formation of the β-catenin depots prior to the contacting the composition comprising the cell with the compound; (iv) assessing the identified compound using a second cell-based assay and/or an *in vitro* assay; and/or (v) determining one or more cellular features of the cell.

16. The method of any one of claims 1-15, further comprising determining one or more cellular features of the cell.

17. The method of any one of claims 1-16, wherein the reference is based on:
    (i) a composition comprising the cell not contacted with the compound;
    (ii) a composition comprising the cell admixed with a control vehicle and not contacted with the compound;
    (iii) a desired β-catenin profile;
    (iv) a reference condensate or a reference polypeptide within the cell; and/or
    (v) a reference composition comprising a cell.

18. A method of identifying β-catenin depots in a cell, the method comprising:
    (a) contacting a composition comprising the cell with a detectable reagent that specifically recognizes an inactive form of a β-catenin polypeptide comprising a phosphorylation at T41 and/or S45; and
    (b) detecting the detectable reagent,
wherein the detection of the detectable reagent within the cell identifies the β-catenin depots in the cell.

19. A method of identifying a compound useful for treating a β-catenin-associated disease, wherein the method comprises identifying a compound according to the method of any one of claims 1-17, optionally wherein the β-catenin-associated disease is selected from the group consisting of a cancer, autosomal dominant polycystic kidney disease (ADPKD), hereditary familial adenomatous polyposis (FAP), Alzheimer's, or a metabolic disease.

20. A method of identifying β-catenin depots in a cell, the method comprising:
    (a) contacting a composition comprising the cell with a first detectable reagent that specifically recognizes a β-catenin polypeptide;
    (b) contacting the composition comprising the cell with a second detectable reagent that specifically recognizes a phospho-H2A.X (P-2A.X) or mediator of DNA damage checkpoint protein 1 (MDC1); and
    (c) detecting the first detectable reagent and the second detectable reagent;

wherein the detection of a colocalization of the first detectable reagent and the second detectable reagent within the cell identifies the β-catenin depots in the cell.