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Supplemental Information

Disorder Targets Misorder in Nuclear Quality Control Degradation: A Disordered Ubiquitin Ligase Directly Recognizes Its Misfolded Substrates

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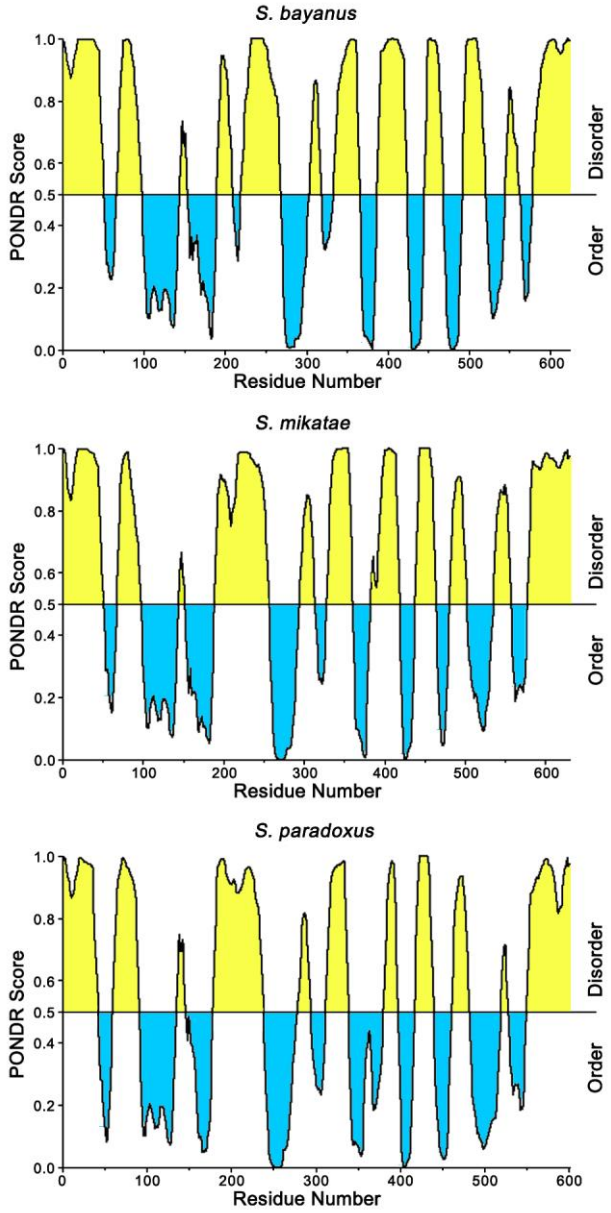


Figure S1: Predicted disorder of San1 homologs. Disorder prediction of the indicated San1 homologs using PONDR (http://www.pondr.com/). Predicted disordered regions have a positive PONDR score by the VL-XT algorithm (yellow).

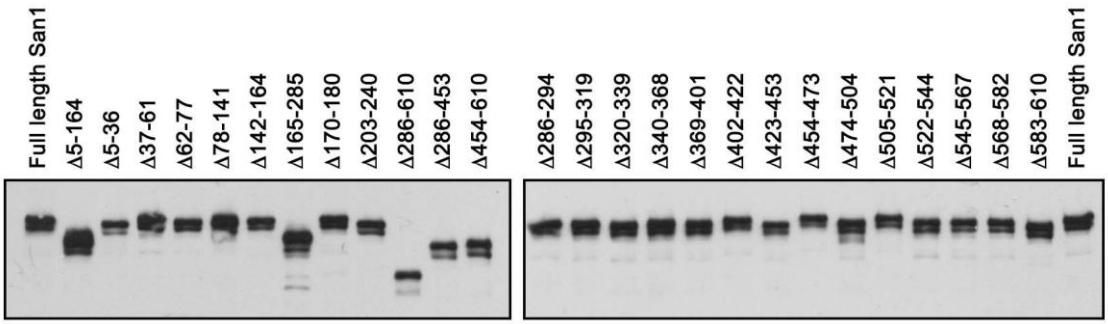
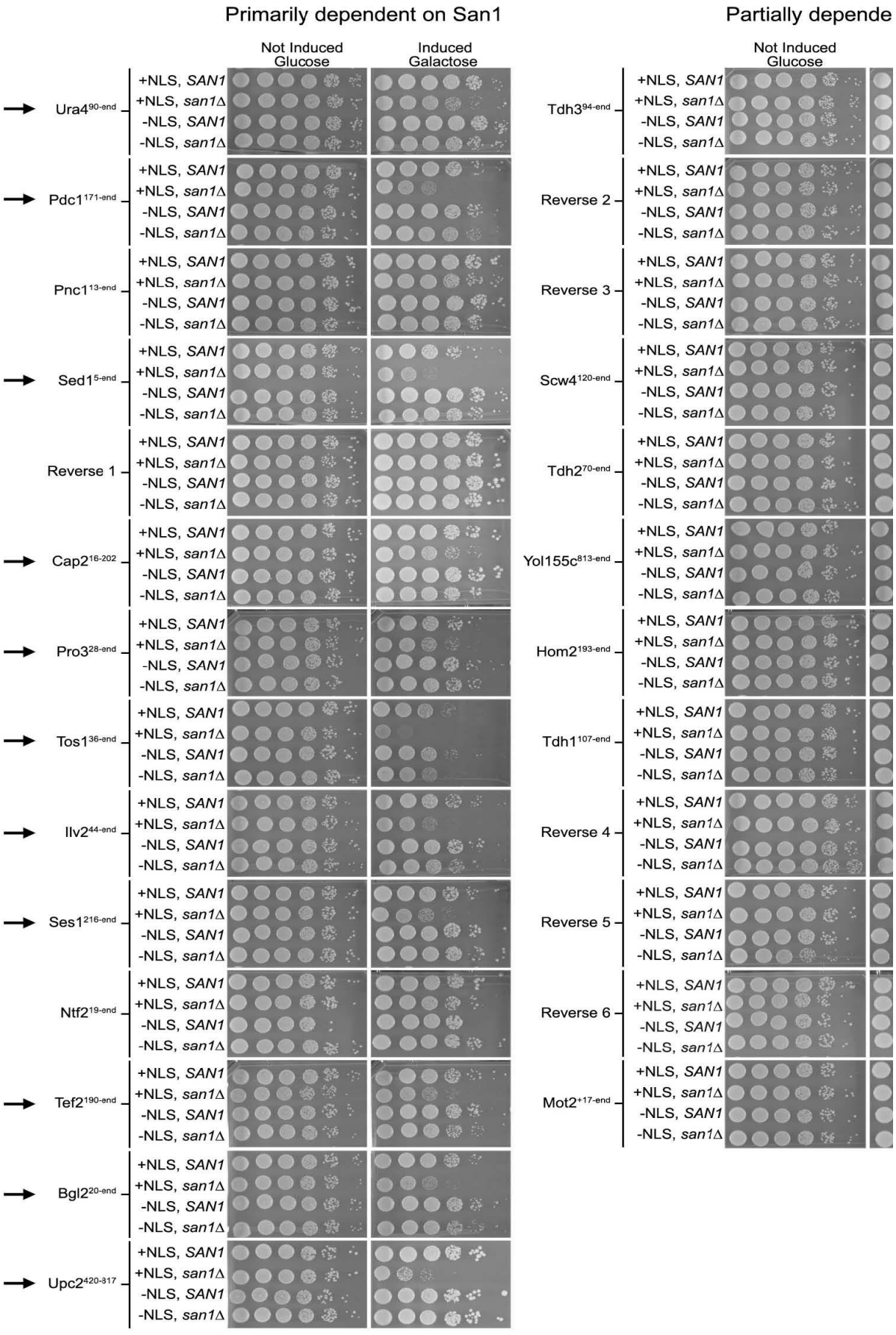


Figure S2. Steady-State Levels of San1 Deletion Mutants Are Similar. Whole cell lysates were analyzed from cells expressing GBD-San1^{C279S} with the indicated San1 deletion. Anti-HSV antibodies were used to detect each GBD-San1^{C279S} protein.

Figure S3: Toxicity of GAD Fusion Proteins. Wild-type or *san1*Δ cells expressing the indicated GAD fusion, with or without an NLS, were spotted in 10-fold serial dilutions onto media containing glucose or galactose. Those GAD fusions whose degradation was primarily dependent upon San1 are grouped in the left column. Those GAD fusions whose degradation was slightly dependent upon San1 are grouped in the right column. Arrows indicate the GAD fusions that confer some observable growth defect.


Primarily dependent on San1
Partially depende
Not Induced Glucose
Induced Galactose
Not Induced Glucose
Ura4^90-end
Pdc1^171-end
Pnc1^13-end
Sed1^5-end
Reverse 1
Cap2^16-202
Pro3^28-end
Tos1^36-end
Ilv2^44-end
Ses1^216-end
Ntf2^19-end
Tef2^190-end
Bgl2^20-end
Upc2^420-817
Tdh3^94-end
Reverse 2
Reverse 3
Scw4^120-end
Tdh2^70-end
Yol155c^813-end
Hom2^193-end
Tdh1^107-end
Reverse 4
Reverse 5
Reverse 6
Mot2^+17-end
+NLS, SAN1
+NLS, san1Δ
-NLS, SAN1
-NLS, san1Δ

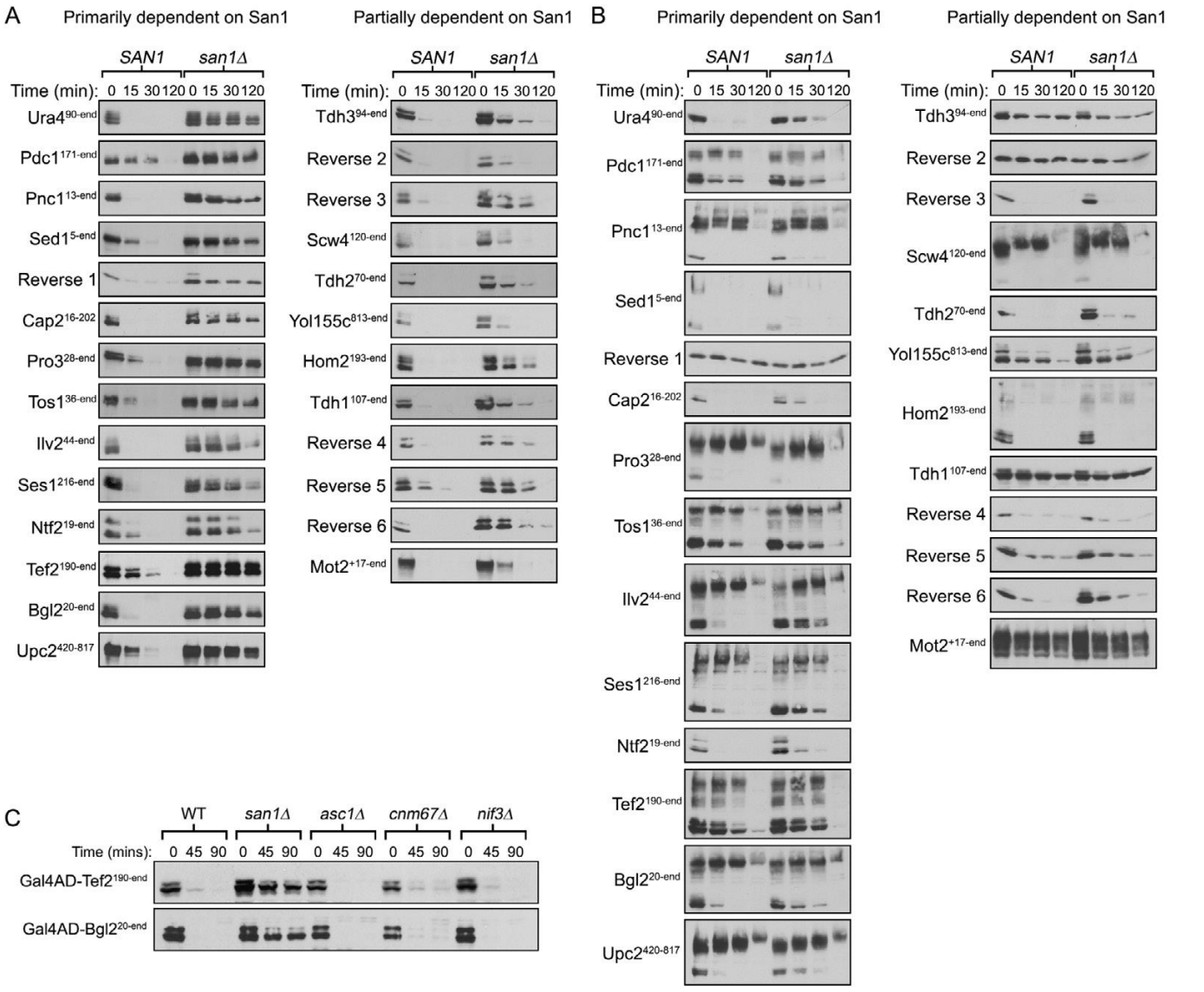


Figure S4. GAD Fusion Proteins Are San1 Substrates. (A) Degradation assays of GAL4AD fusions with the GAL4AD NLS intact. Cycloheximide-chase assays of cells expressing the indicated GAD fusion were performed to assess stability in the presence or absence of *SAN1*. Time after cycloheximide addition is indicated above each lane. Anti-GAD antibodies were used to detect each GAD fusion. Those GAD fusions whose degradation was primarily dependent upon San1 are grouped in the left column. Those GAD fusions whose degradation was slightly dependent upon San1 are grouped in the right column. (B) Degradation assays of the same fusions with the NLS removed. (C) San1-mediated degradation does not require Asc1, Cnm67, or Nif3. Cycloheximide-chase assays of cells expressing the indicated GAD fusion were performed to assess stability in the presence or absence of *SAN1*, *ASC1*, *CNM67*, or *NIF3*.