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Supporting information for article:

Uridine as a new scavenger for synchrotron-based structural biology techniques

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S1. MX results

Table S1 Crystal definition and classification according to the concentration of uridine, the beam size dimensions, dose rate and temperature. Crystals 12 and 16 were used to evaluate site-specific radiation damage.

Crystal Number	[Uridine] (mM)	Beam size FWHM (h *x* v μm)	Dose Rate (kGy s^{-1})	T (K)
1-4	0	100 x 85	13.8	RT
5-8	200	100 x 85	13.8	RT
9-11	500	100 x 85	13.8	RT
12-15	0	90 x 80	20.0	RT
16-18	1000	90 x 80	20.0	RT
19-21	0	86 x 78	90.0	100
22	500	86 x 78	90.0	100
23-25	1000	86 x 78	90.0	100

Table S2 Data collection statistics for all crystals collected at room temperature extracted from the initial integration by *XDS*. Resolution range is 50-1.7 Å. Space group for all crystals is $P4_32_12$. Crystals 12 and 16 are used in the main text to evaluate the site-specific radiation damage.

Crystal 1 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8495	98.9 (99.5)	30.76 (15.03)	4.5 (11.1)	23.15	79.2	37.9	0.034	99.9	1.00
0.62	8508	99.0 (99.5)	21.22 (8.48)	6.1 (21.4)	26.33	79.3	37.9	0.106	99.9	0.86
0.93	8492	98.8 (99.2)	21.12 (6.33)	6.2 (30.7)	30.28	79.3	37.9	0.085	99.9	0.64
1.24	8480	98.8 (99.4)	15.39 (2.08)	9.2 (90.6)	37.24	79.3	37.8	0.096	99.9	0.36
1.55	8484	99.0 (99.0)	6.27 (0.33)	27.9 (520.4)	44.99	79.3	37.8	0.184	99.4	0.14

Crystal 2 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8559	99.6 (99.9)	35.66 (19.06)	3.8 (8.8)	23.12	79.2	37.9	0.033	99.9	1.00

0.62	8564	99.6 (99.8)	33.48 (15.42)	4.0 (11.1)	25.68	79.3	37.9	0.033	99.9	0.86
0.93	8569	99.7 (99.9)	30.43 (10.7)	4.3 (16.3)	29.71	79.3	37.9	0.041	99.9	0.66
1.24	8564	99.8 (99.9)	22.01 (4.29)	6.0 (45.3)	35.84	79.3	37.9	0.067	99.9	0.41
1.55	8538	99.7 (99.6)	11.56 (0.84)	15.9 (239.5)	40.96	79.3	37.8	0.147	99.8	0.21

Crystal 3 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8564	99.8 (99.8)	39.44 (19.00)	3.4 (8.6)	24.14	79.2	37.9	0.054	99.9	1.00
0.62	8568	99.7 (99.4)	36.03 (14.52)	3.6 (11.5)	27.67	79.2	37.9	0.057	100.0	0.80
0.93	8575	99.8 (99.9)	28.21 (7.02)	4.7 (30.1)	33.91	79.3	37.9	0.072	100.0	0.54
1.24	8567	99.8 (99.6)	14.39 (1.06)	11.8 (200.8)	43.80	79.4	37.8	0.148	99.9	0.26
1.55	8300	97.2 (92.0)	5.37 (-)	45.8 (-)	52.79	79.4	37.8	0.270	99.0	0.09

Crystal 4 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.62	8569	99.7 (100)	30.04 (12.81)	4.4 (13.1)	26.33	79.3	37.9	0.037	99.9	0.84
0.93	8577	99.7 (99.9)	25.68 (8.59)	5.0 (20.8)	30.64	79.3	37.9	0.039	99.9	0.62
1.24	8589	99.7 (99.5)	18.32 (3.07)	7.2 (68.4)	38.45	79.4	37.9	0.054	99.9	0.36
1.55	8596	99.7 (99.0)	8.00 (0.34)	20.3 (512.6)	50.12	79.5	37.9	0.107	99.8	0.13

Crystal 5 (200mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8329	97.2 (98.7)	34.08 (16.16)	3.8 (10.3)	24.29	79.1	37.9	0.034	99.9	1.00
0.62	8334	97.2 (98.3)	32.18 (13.72)	4.0 (12.1)	26.41	79.2	37.9	0.036	99.9	0.88
0.93	8332	97.2 (98.8)	29.41 (10.30)	4.3 (15.9)	29.55	79.2	37.9	0.041	99.9	0.72
1.24	8336	97.1 (97.5)	23.71 (6.37)	5.1 (28.6)	34.05	79.3	37.9	0.049	99.9	0.52
1.55	8351	97.3 (98.5)	16.6 (2.09)	7.7 (93.1)	41.62	79.3	37.9	0.073	99.9	0.31
1.86	8305	96.7 (94.9)	7.96 (0.13)	20.8 (1134)	54.50	79.4	37.8	0.145	99.8	0.12

Crystal 6 (200mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0

0.31	8535	99.5 (99.0)	36.25 (18.51)	3.7 (9.2)	23.73	79.2	37.9	0.039	99.9	1.00
0.62	8539	99.4 (98.8)	34.22 (15.42)	3.8 (10.9)	26.14	79.2	37.9	0.044	99.9	0.89
0.93	8539	99.5 (98.9)	32.71 (11.32)	3.9 (15.4)	29.61	79.3	37.9	0.054	100.0	0.76
1.24	8539	99.5 (98.7)	28.64 (6.04)	4.6 (30.8)	33.96	79.3	37.9	0.079	100.0	0.58
1.55	8537	99.5 (99.0)	19.27 (1.98)	8.2 (100.0)	39.00	79.4	37.9	0.132	99.9	0.38
1.86	8575	99.5 (98.7)	10.38 (0.54)	19.0 (345.5)	43.41	79.4	37.9	0.192	99.7	0.22

Crystal 7 (200mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8541	99.7 (99.9)	30.78 (13.4)	4.4 (12.1)	24.49	79.1	38.0	0.043	99.9	1.00
0.62	8553	99.8 (99.9)	28.78 (11.5)	4.7 (14.6)	26.46	79.1	37.9	0.041	99.9	0.88
0.93	8565	99.8 (99.9)	26.25 (8.97)	5.0 (19.1)	29.11	79.2	37.9	0.042	99.9	0.74
1.24	8582	99.9 (99.5)	22.52 (5.55)	5.8 (33.0)	33.46	79.2	37.9	0.047	99.9	0.55
1.55	8594	99.8 (99.4)	15.97 (1.82)	8.5 (112.3)	41.48	79.3	37.9	0.063	99.9	0.33
1.86	8597	99.7 (99.3)	7.8 (0.16)	23.6 (954.9)	54.46	79.5	37.8	0.102	99.7	0.13

Crystal 8 (200mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8452	98.6 (99.3)	31.2 (16.78)	4.3 (9.9)	23.40	79.1	37.96	0.026	99.9	1.00
0.62	8460	98.6 (99.2)	29.3 (14.4)	4.5 (11.5)	25.21	79.1	37.95	0.025	99.9	0.88
0.93	8463	98.6 (99.1)	27.54 (11.27)	4.6 (15.2)	28.25	79.17	37.94	0.027	99.9	0.74
1.24	8485	98.8 (98.7)	24.32 (7.00)	5.1 (25.5)	33.20	79.24	37.93	0.04	99.9	0.57
1.55	8491	98.7 (99.2)	17.34 (2.17)	7.5 (90.8)	41.78	79.34	37.92	0.068	99.9	0.34
1.86	8502	98.5 (98.1)	8.84 (0.22)	18.3 (647.9)	53.81	79.46	37.90	0.111	99.8	0.14

Crystal 9 (500mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8337	97.3 (98.8)	35.49 (18.22)	3.7 (9.0)	23.88	79.10	37.98	0.039	99.9	1.00
0.62	8345	97.3 (98.7)	33.61 (16.13)	3.8 (10.2)	25.39	79.13	37.97	0.037	99.9	0.90
0.93	8366	97.5 (99.0)	31.82 (13.59)	3.9 (12.1)	27.65	79.18	37.97	0.039	99.9	0.80
1.24	8365	97.4 (98.7)	30.35 (10.4)	4 (16.0)	30.74	79.23	37.97	0.041	99.9	0.68
1.55	8391	97.5 (99.0)	26.57 (6.39)	4.5 (27.6)	35.18	79.28	37.97	0.052	100	0.53

1.86	8387	97.5 (98.9)	20.06 (2.48)	6.2 (76.4)	41.61	79.33	37.97	0.073	99.9	0.35
2.17	8348	97.5 (98.9)	11.64 (0.61)	13.9 (296.3)	47.10	79.34	37.96	0.123	99.8	0.19

Crystal 10 (500mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8551	99.8 (99.9)	38.18 (21.88)	3.6 (7.9)	23.53	79.1	38.0	0.048	99.9	1.00
0.62	8551	99.8 (99.7)	36.67 (19.18)	3.6 (9.1)	25.36	79.1	38.0	0.049	99.9	0.92
0.93	8559	99.8 (99.6)	36.27 (16.37)	3.6 (10.4)	27.48	79.1	38.0	0.05	99.9	0.82
1.24	8565	99.8 (99.8)	32.81 (12.89)	3.8 (13.1)	30.26	79.2	38.0	0.055	99.9	0.71
1.55	8576	99.8 (99.7)	31.76 (9.11)	3.8 (19.6)	34.05	79.2	38.0	0.06	100	0.58
1.86	8585	99.8 (99.6)	26.11 (4.36)	4.8 (46.0)	39.36	79.3	38.0	0.08	100	0.41
2.17	8588	99.8 (99.5)	14.09 (1.12)	12.0 (189.6)	43.21	79.2	37.9	0.148	99.9	0.25

Crystal 11 (500mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.31	8538	99.9 (99.7)	29.31 (9.98)	4.9 (19.0)	26.03	79.1	37.9	0.159	99.9	1.00
0.62	8541	99.8 (99.3)	27.47 (8.40)	5.2 (22.6)	27.58	79.1	37.9	0.163	99.9	0.91
0.93	8550	99.9 (99.5)	25.62 (6.75)	5.5 (28.8)	29.46	79.2	37.9	0.167	99.9	0.81
1.24	8567	99.9 (99.7)	23.09 (4.75)	6.2 (42.1)	32.31	79.2	37.9	0.172	99.9	0.68
1.55	8587	99.9 (99.7)	19.52 (2.58)	7.6 (77.8)	36.87	79.3	37.9	0.187	99.9	0.51
1.86	8594	99.9 (99.7)	14.05 (0.88)	11.8 (231.9)	44.94	79.4	38.0	0.226	99.9	0.32
2.17	8425	97.4 (91.6)	5.88 (-)	41.9 (-)	58.71	79.5	38.0	0.477	99.1	0.18

Crystal 12 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36§	8586	99.9 (99.8)	16.76 (14.14)	5.9 (7.6)	21.52	79.3	37.9	0.035	99.4	1.00
0.72#	8579	99.8 (99.7)	21.96 (17.77)	5.0 (9.3)	26.80	79.3	37.9	0.04	99.7	0.82
1.08*	8581	99.8 (99.7)	26.94 (8.71)	5.0 (26.2)	33.38	79.3	37.9	0.061	99.9	0.51
1.44	8566	99.8 (99.9)	13.67 (2.23)	12.4 (118.9)	37.27	79.3	37.8	0.148	99.8	0.27
1.8	8580	99.7 (99.3)	7.94 (1.21)	21.3 (216.0)	39.37	79.3	37.9	0.152	99.5	0.13

§ data set used for PDB ID 5L9J; # data set used for PDB ID 5LA5; * data set used for PDB ID 5LA8.

Crystal 13 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36	8563	99.7 (99.6)	42.67 (34.65)	3.8 (5.2)	21.79	79.3	37.9	0.057	99.8	1.00
0.72	8507	99.0 (98.4)	46.17 (38.02)	3.5 (5.4)	25.99	79.3	37.9	0.06	99.8	0.88
1.08	8577	99.8 (100)	34.92 (14.45)	3.8 (15.2)	31.16	79.3	37.9	0.072	99.9	0.55
1.44	8586	99.8 (99.5)	24.7 (5.33)	6.4 (47.9)	33.53	79.3	37.9	0.132	99.9	0.34
1.8	8589	99.7 (99.0)	14.22 (2.09)	12.1 (110.7)	35.868	79.3	37.835	0.185	99.8	0.21

Crystal 14 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36	8122	94.6 (92.1)	33.64 (29.71)	4.8 (6.2)	22.08	79.2	38.0	0.054	99.7	1.00
0.72	8159	94.9 (92.5)	33.86 (16.93)	3.9 (11.0)	28.14	79.3	37.9	0.067	99.9	0.78
1.08	8133	94.6 (92.1)	28.93 (6.55)	4.9 (34.2)	33.25	79.3	37.9	0.114	100	0.49
1.44	8089	94.0 (91.2)	15.13 (1.61)	12.2 (143.1)	37.57	79.3	37.9	0.257	99.8	0.28
1.8	8042	93.6 (91.8)	9.13 (0.7)	21.7 (291.2)	39.54	79.3	37.8	0.282	99.6	0.15

Crystal 15 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36	8526	99.2 (99.4)	40.09 (35.26)	4.1 (4.8)	21.25	79.2	37.9	0.053	99.7	1.00
0.72	8570	99.7 (99.6)	37.71 (22.58)	3.6 (7.6)	26.86	79.3	37.9	0.057	99.9	0.80
1.08	8585	99.9 (99.8)	34.8 (12.87)	3.7 (16.6)	32.25	79.3	37.9	0.081	99.9	0.52
1.44	8569	99.8 (99.7)	24.81 (4.73)	6.5 (55.6)	35.50	79.3	37.9	0.152	99.9	0.29
1.8	8535	99.8 (99.6)	14.96 (1.86)	11.9 (127.7)	38.99	79.3	37.9	0.223	99.8	0.16

Crystal 16 (1M uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36[§]	8525	99.6 (99.7)	44.45 (26.75)	3.1 (6.1)	23.59	79.1	37.9	0.058	99.9	1.00
0.72[#]	8523	99.4 (98.8)	42.24 (23.52)	3.2 (6.8)	25.46	79.1	37.9	0.063	99.9	0.92
1.08[*]	8544	99.7 (99.9)	42.53 (20.74)	3.0 (8.0)	27.81	79.2	37.9	0.069	100	0.84
1.44	8547	99.7 (99.6)	41.21 (16.04)	3.1 (11.0)	30.68	79.2	37.9	0.082	100	0.71
1.8	8535	99.6 (99.7)	35.37 (8.90)	3.7 (22.1)	34.62	79.2	37.9	0.145	100	0.52
2.16	8518	99.5 (99.7)	24.99 (4.21)	6.0 (48.8)	36.82	79.2	37.9	0.243	99.9	0.36

2.52	8475	99.3 (98.6)	16.16 (2.15)	9.1 (91.4)	39.12	79.1	37.8	0.323	99.9	0.23
2.88	8477	99.6 (99.7)	10.5 (1.15)	14.4 (167.7)	40.38	79.0	37.8	0.427	99.7	0.16
3.24	8319	99.0 (98.9)	5.65 (0.85)	23.4 (261.7)	39.90	78.7	37.6	0.391	99.1	0.10

§ data set used for PDB ID 5LAF; # data set used for PDB ID 5LAG; * data set used for PDB ID 5LAN.

Crystal 17 (1M uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36	8539	99.7 (99.7)	39.0 (22.78)	3.5 (7.2)	23.71	79.0	38.0	0.052	99.9	1.00
0.72	8544	99.7 (99.8)	37.38 (20.56)	3.6 (8.2)	25.18	79.0	38.0	0.051	99.9	0.91
1.08	8565	99.9 (99.9)	36.06 (16.20)	3.6 (10.4)	28.10	79.1	37.9	0.06	99.9	0.83
1.44	8561	99.8 (99.8)	34.44 (12.04)	3.7 (14.7)	30.95	79.2	37.9	0.08	100	0.70
1.8	8548	99.8 (99.5)	29.91 (7.87)	4.3 (24.5)	33.06	79.2	37.9	0.11	100	0.55
2.16	8532	99.8 (100)	24.06 (4.68)	5.9 (45.1)	34.15	79.2	37.9	0.15	99.9	0.44
2.52	8566	99.7 (99.3)	18.78 (2.73)	8.6 (77.3)	34.694	79.203	37.884	0.166	99.9	0.37
2.88	8555	99.7 (99.0)	14.63 (1.78)	11.8 (118.1)	35.808	79.239	37.886	0.174	99.8	0.28
3.24	8557	99.7 (99.0)	10.56 (1.21)	16.9 (172.2)	36.823	79.302	37.904	0.183	99.7	0.21

Crystal 18 (1M uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	I_n / I_0
0.36	8552	99.7 (99.9)	18.49 (14.2)	4.9 (7.8)	22.22	79.1	37.9	0.032	99.6	1.00
0.72	8543	99.6 (99.7)	38.58 (21.32)	3.4 (8.3)	24.91	79.2	37.9	0.039	99.9	0.95
1.08	8557	99.7 (99.9)	36.47 (16.96)	3.5 (10.0)	27.52	79.2	37.9	0.054	99.9	0.88
1.44	8567	99.7 (99.3)	34.25 (11.97)	3.8 (16.3)	30.65	79.2	37.9	0.078	100	0.76
1.8	8549	99.7 (99.6)	28.13 (6.68)	5.0 (33.4)	33.66	79.2	37.9	0.13	99.9	0.60
2.16	8538	99.6 (99.3)	19.29 (3.03)	8.3 (75.9)	36.16	79.2	37.9	0.18	99.9	0.46
2.52	8550	99.6 (99.3)	13.36 (1.80)	13.4 (131.1)	37.37	79.2	37.9	0.213	99.8	0.35
2.88	8533	99.3 (98.1)	9.86 (1.19)	19.7 (200.1)	38.60	79.2	37.9	0.224	99.5	0.26
3.24	8565	99.3 (98.0)	7.56 (0.86)	26.0 (280.0)	39.29	79.2	37.9	0.213	99.2	0.19

Table S3 Data collection statistics for all crystals collected at 100 K extracted from the initial integration by *XDS*. Resolution range is 50-1.7 Å. Space group for all crystals is $P4_32_12$.

Crystal 18 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0
1.61	13288	99.7 (99.6)	66.15 (36.44)	2.1 (4.3)	17.43	78.8	37.0	0.181	100.0	1.00
45.93	13366	99.6 (99.2)	50.85 (21.29)	2.5 (7.5)	21.94	79.0	37.1	0.174	100.0	0.66
101.33	13415	99.6 (99.5)	27.6 (6.05)	4.1 (27.1)	29.33	79.0	37.1	0.189	99.9	0.37
145.65	13345	99.5 (99.3)	17.96 (2.21)	5.8 (79.9)	34.70	79.1	37.1	0.209	99.9	0.23

Crystal 19 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0
1.61	12646	95.0 (97.1)	72.99 (39.44)	1.9 (3.9)	17.84	78.7	37.0	0.156	100.0	1.00
45.93	12695	95.0 (97.5)	56.91 (20.03)	2.1 (7.8)	22.65	78.9	37.1	0.181	100.0	0.69
101.33	12579	94.5 (95.7)	28.53 (4.85)	3.8 (33.1)	30.56	78.8	37.1	0.245	100.0	0.40
145.65	12473	94.3 (95.4)	17.75 (1.86)	5.8 (89.7)	34.57	78.7	37.1	0.297	99.9	0.25

Crystal 20 (No uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0
1.61	13255	99.7 (99.3)	59.78 (36.77)	2.5 (4.3)	16.36	78.8	37.0	0.113	99.9	1.00
45.93	13379	99.8 (99.9)	55.62 (19.44)	2.2 (8.8)	21.13	79.0	37.1	0.134	100.0	0.74
101.33	13386	99.7 (99.7)	34.49 (4.38)	3.7 (39.5)	28.74	79.1	37.1	0.164	100.0	0.44
145.65	13417	99.5 (98.5)	23.60 (1.59)	5.5 (124.9)	34.43	79.2	37.1	0.188	100.0	0.28

Crystal 21 (500mM uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0
1.61	13265	99.7 (99.0)	48.02 (34.84)	3.4 (4.6)	16.96	78.7	37.0	0.126	99.9	1.00
45.93	13395	99.8 (99.6)	47.64 (19.92)	2.8 (8.2)	21.94	78.9	37.1	0.137	100.0	0.75
101.33	13423	99.8 (99.1)	30.83 (4.36)	3.9 (45.3)	30.44	79.1	37.2	0.172	100.0	0.45
145.65	13570	99.8 (99.3)	19.36 (1.19)	5.9 (165.1)	37.33	79.2	37.2	0.176	100.0	0.29

Crystal 22 (1M uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0

1.61	13070	99.6 (99.6)	48.60 (15.04)	2.7 (11.6)	22.17	78.2	37.1	0.314	100.0	1.00
45.93	13200	99.7 (99.6)	40.05 (8.28)	3.1 (22.2)	26.85	78.5	37.2	0.308	100.0	0.66
101.33	13323	99.7 (99.6)	24.45 (2.01)	4.6 (98.1)	35.37	78.7	37.3	0.298	100.0	0.36
145.65	13379	99.5 (98.1)	16.93 (0.46)	6.6 (445.7)	43.58	78.7	37.3	0.335	100.0	0.22

Crystal 23 (1M uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0
1.61	13251	99.7 (99.8)	50.96 (27.63)	2.8 (5.9)	20.05	78.6	37.0	0.113	99.9	1.00
45.93	13339	99.7 (99.9)	42.13 (16.32)	3.1 (10.4)	24.88	78.8	37.1	0.107	99.9	0.67
101.33	13378	99.7 (99.6)	30.16 (4.63)	3.7 (41.1)	32.73	79.0	37.2	0.116	100.0	0.40
145.65	13373	99.5 (99.2)	21.78 (1.32)	4.9 (152.1)	39.18	79.0	37.2	0.136	99.9	0.27

Crystal 24 (1M uridine)

Dose (MGy)	Unique reflections	Complete-ness (%)	<I>/σ(I)	R-meas (%)	B-factor (Å^2)	a = b (Å)	c (Å)	Mosaicity (deg)	CC1/2	In / I0
1.61	13247	99.7 (99.0)	70.14 (34.77)	1.9 (4.6)	19.53	78.6	37.0	0.145	100.0	1.00
45.93	13338	99.7 (99.6)	58.05 (19.75)	2.2 (8.5)	23.84	78.8	37.2	0.140	100.0	0.71
101.33	13341	99.7 (99.1)	34.15 (4.88)	3.3 (38.1)	31.17	78.9	37.2	0.167	100.0	0.43
145.65	13340	99.7 (99.1)	22.12 (1.61)	4.9 (121.2)	36.66	78.9	37.2	0.195	100.0	0.28

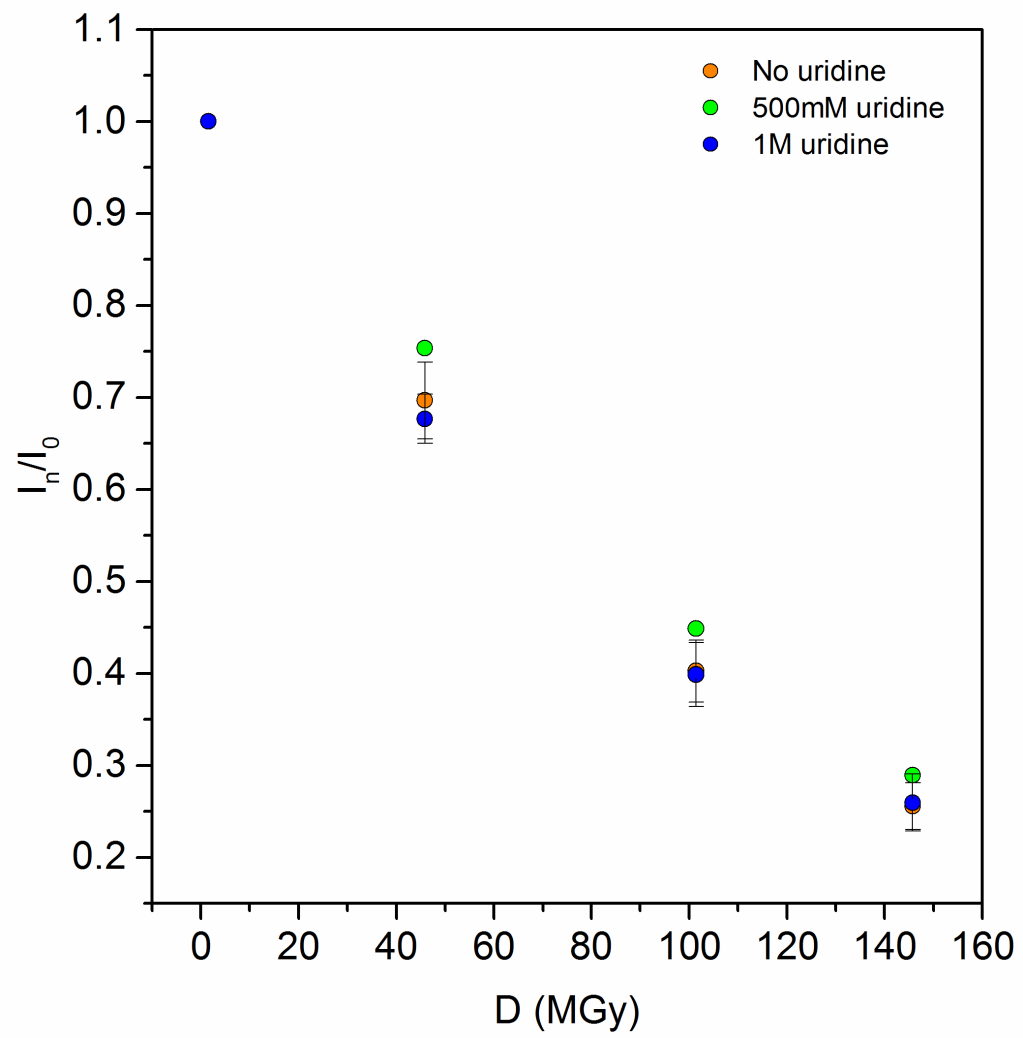

Figure S1 Decay of the mean normalized intensity (I/I_0) with absorbed dose on lysozyme crystals at 100 K without uridine in the solution (orange, crystals 18-20), with 500 mM uridine (green, crystal 21) and with 1 M uridine (blue, crystals 22-24). I/I_0 is calculated in the 50-2 Å resolution range.

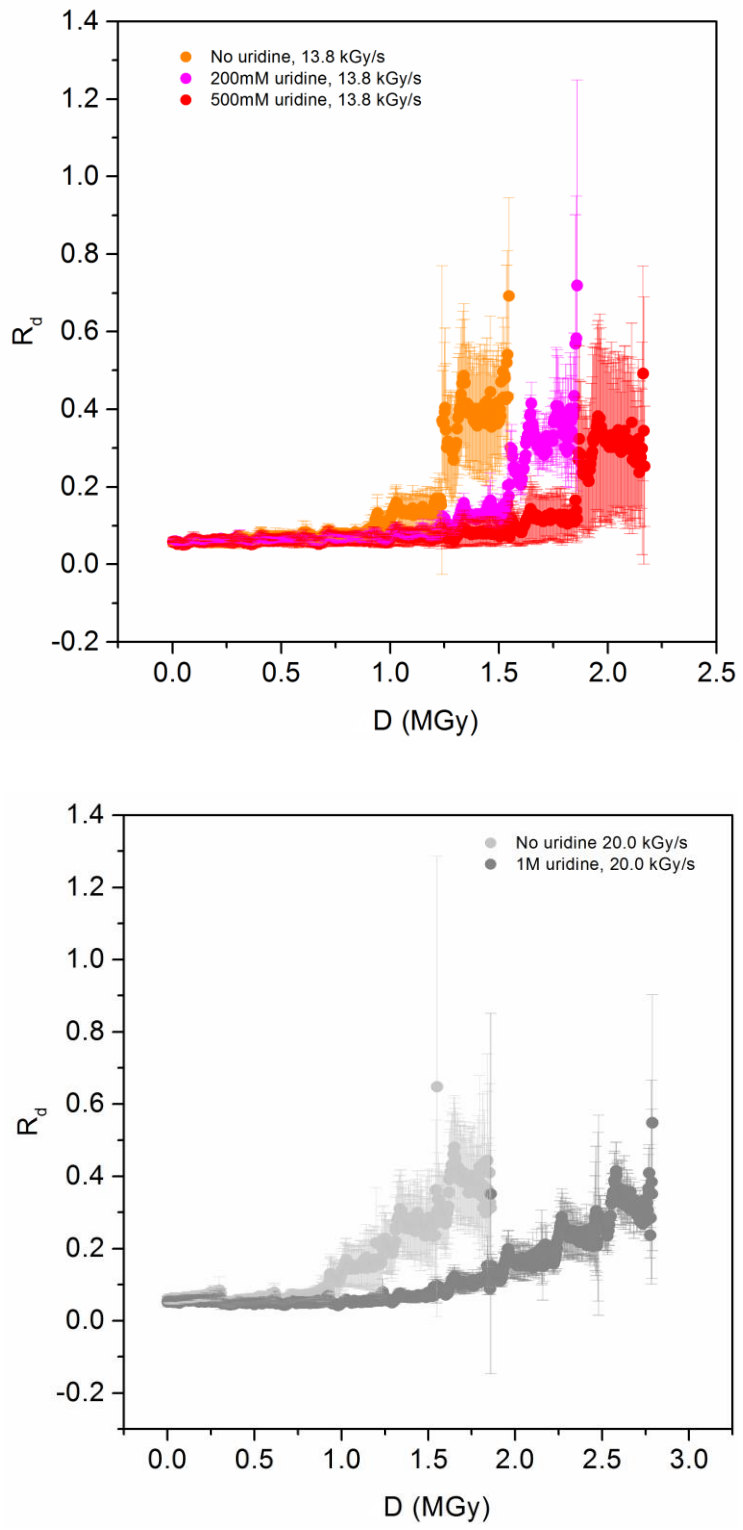

Figure S2 Evolution of the damage R-factor (R_d) as a function of dose for native lysozyme crystals and lysozyme crystals soaked in different concentrations of uridine (200mM, 500mM and 1M). (Top) Data collected at 13.8 kGy s^{-1} and (bottom) data collected at 20.0 kGy s^{-1}. R_d is calculated in the resolution range 50-2 Å. Each point in the plot is the mean obtained by 3 or 4 independent measures from different crystals. The associated error bar to each point shows the standard deviation of the mean.

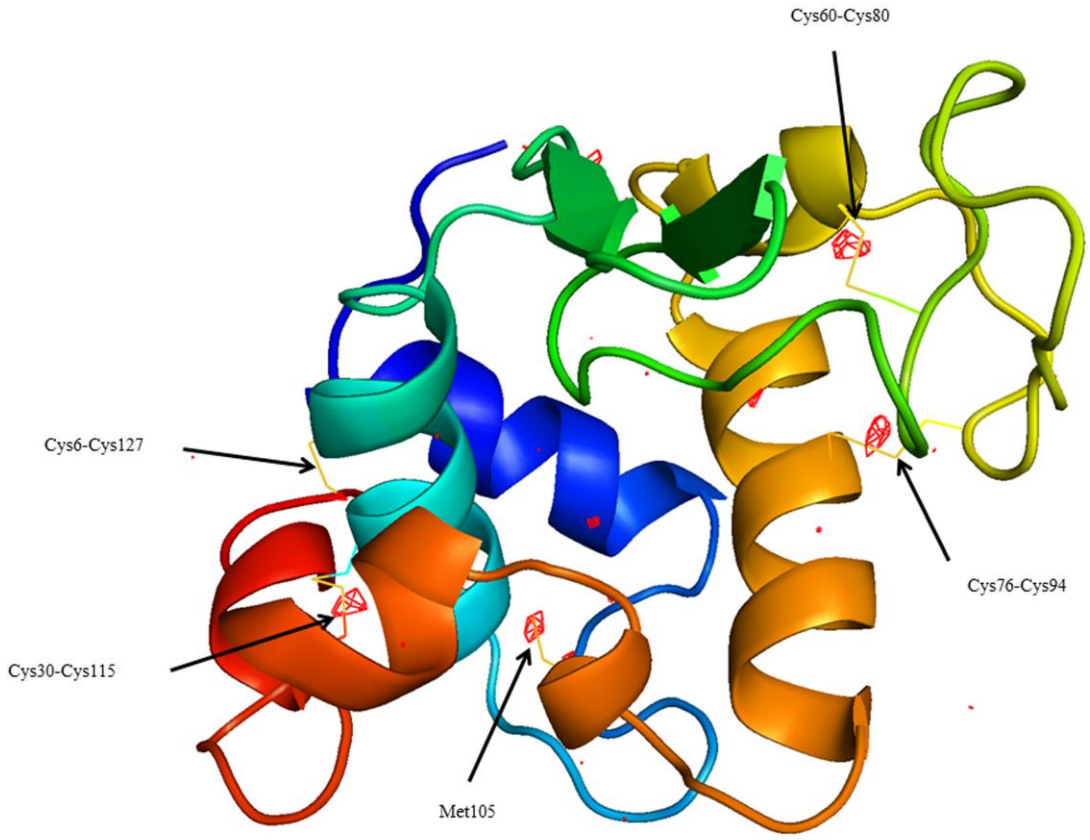

Figure S3 ($F_{obs,3} - F_{obs,1}, \alpha_{calc,1}$) map of a crystal with 1 M of uridine at room temperature (crystal 16 from table S2) contoured at -4σ. The arrows point to the four disulphide bonds and to Met105.Only four relevant peaks are observed in Cys30-Cys115, Cys76-Cys94, Cys64-Cys80 and Met105. At -5σ no significant peaks are observed.

S2. SAXS results

Table S4 Comparison of beamline parameters and experimental conditions for different radiation damage studies performed for lysozyme at various SAXS beamlines. All the experiments were performed in 40 mM sodium acetate, pH 3.8, 150 mM NaCl.

	This study (P12, PETRA III)	Jeffries *et al*. 2015 (P12, PETRA III)	Kuwamoto *et al*. 2004 (BL45XU, SPring-8)
Concentration (mg/ml)	7.2	8.8	4.9
Flux (photons/second)	1.4×10^{12}	4×10^{12}	2.2×10^{11}
Max. Beam size (µm, h×v)	500 × 250	500 × 250	800 ×600
Photon energy (keV)	10	10	13.8

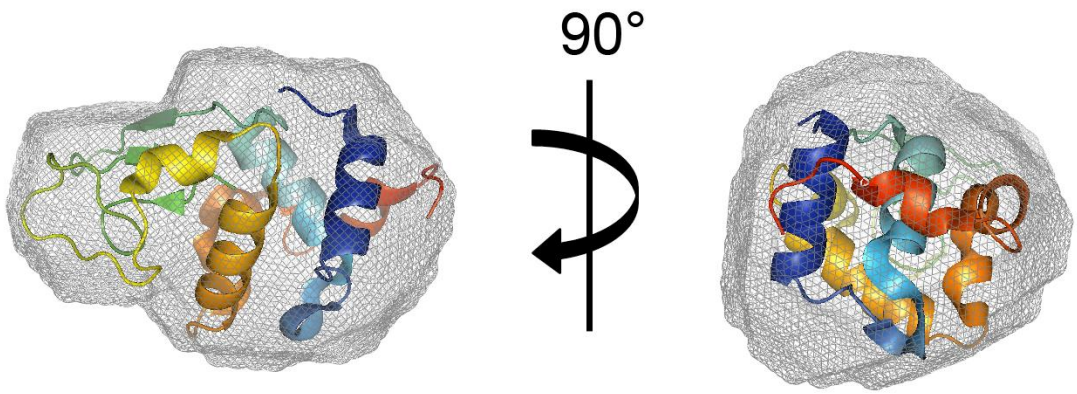

Figure S4 Ab initio reconstruction of the lysozyme low-resolution envelope from SAXS data collected in presence of 100 mM uridine, obtained using DAMMIF (Franke & Svergun, 2009) (grey mesh). The crystal structure of lysozyme (PDB ID: 4N8Z) was docked into the SAXS envelope by using SUPCOMB (Kozin & Svergun, 2001) and rendered using PyMOL. The low-resolution model has a NSD value of 0.499.