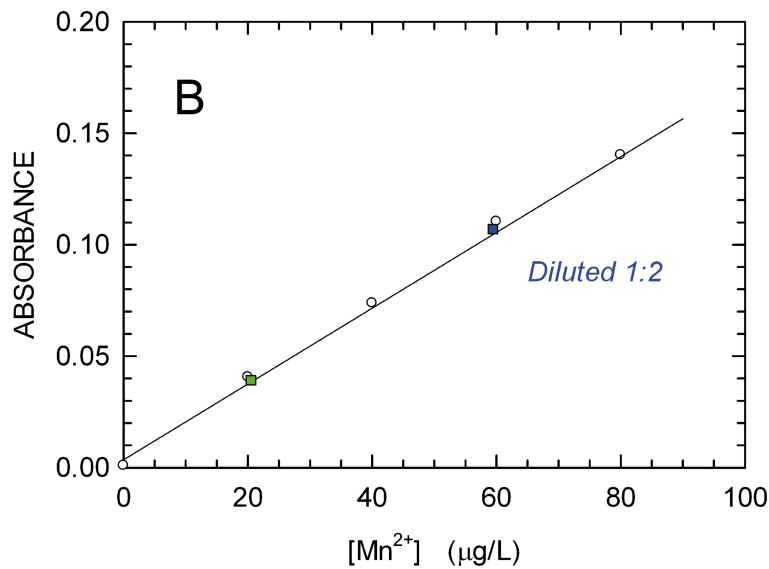
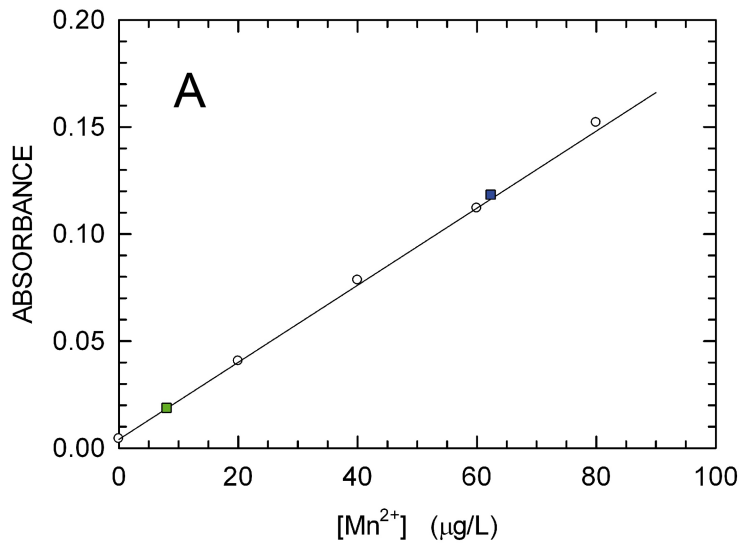


Supplementary Figure S1

Manganese and growth of *Deinococcus radiodurans*. Growth kinetics of *D. radiodurans* in TGY liquid medium (green circles, squares, and triangles) or in the same medium supplemented with 5 μM MnCl₂ (blue circles, squares, and triangles). The growth kinetics was determined for 3 independent cultures (3 different single colonies were used) of each sample (green symbols: TGY medium; blue symbols: TGY medium supplemented with 5 μM MnCl₂). The horizontal bars represent the mean of the final Absorbance values determined for the two groups of cultures (the error bars indicate standard deviation). The experimental mean values were compared by the Student's t test (***) indicates P < 0.001).



Supplementary Figure S2

Manganese levels in cells of *Deinococcus radiodurans*. Cultures of *D. radiodurans* were grown for 15 and 19 h (Panels a and b, respectively) in TGY medium, or in the same medium supplemented with 5 μM $MnCl_2$. The content of Mn^{2+} in whole cells grown in TGY (green squares) or in medium supplemented with 5 μM $MnCl_2$ (blue squares) was determined by atomic absorption spectroscopy, and compared with appropriate standards (open circles). The analyses were performed using 1 mL of each cell suspension (in ultrapure water). The number of cells per mL was determined on sample aliquots, and the volume of a single cell was assumed as equal to 8 μm^3 . It should be noted that the cells volume accounted for about 0.1% of the sample volume. To avoid underestimation of the Mn^{2+} concentration in cells grown for 19 h in manganese-enriched medium, the sample was diluted 1:2 with ultrapure water.

Sample	Identity	Function
1	Gi10957459 (DR_B0067)	Nuclease (extracellular)
2	Gi15805352 (DR_0323)	50S ribosomal L5 protein
3	Gi15807484 (DR_2499)	Nucleoside diphosphate kinase
4	Gi15806486 (DR_1473) Gi15807160 (DR_2166)	Phage shock protein A Purine nucleoside phosphorylase
5	Gi15806271	Hypothetical DR-1252 protein
6	Gi15807721 (DR_A0053) Gi15806895 (DR_1895)	Acetyl-CoA transferase Alanine dehydrogenase
7	Gi15805322 Gi15807570 (DR_2588)	Hypothetical DR-0291 Iron ABC transporter
8	Gi15807484 (DR_2499)	Nucleoside diphosphate kinase
9	Gi15805079 (DR_0038)	Serine-OH methyl transferase
10	Gi15806798 (DR_1797)	NusA
11	Gi10957459 (DR_B0067)	Nuclease (extracellular)
12	Gi15807466 (DR_2480)	Acetyl-CoA transferase
13	Gi15805352 (DR_0323)	50S ribosomal L5 protein
14	Gi15807039 (DR_2045)	50S ribosomal L1 protein
15	Gi15807036	Hypothetical DR-2042
16	Gi94984602 (Accession WP_011529639.1)	Unnamed protein product [<i>Deinococcus geothermalis</i> DSM 11300]
17	Gi970087 (clone pKDR1- Accession BAA09937.1)	Catalase
18	Gi15806739 (DR_1736)	2',3'-cyclic 2' phosphodiesterase
19	Gi 7331218 -	Human Keratin 1 (contamination)

20	Gi15806191	Hypothetical DR-1172
21	Gi15807375 (DR_2384)	Phenylacetic acid degradation protein (PaaB)
22	Gi 294678507 -	Hypothetical protein RCAP_rcc02988 [<i>Rhodobacter capsulatus</i> SB 1003]
23	Gi15807944 (DR_A0283)	Serine Protease
24	Gi15806798 (DR_1797)	NusA
25	Gi15806580 (DR_1571)	Peptide ABC transporter
26	Gi15805713	Hypothetical DR-0686
27	Gi15807466 (DR_2480) Gi15805338 (DR_0309)	Acetyl-CoA acetyltransferase Elongation factor Tu
28	Gi15807826 (DR_A0157)	Phosphate ABC transporter
29	Gi15807039 (DR_2045)	50S ribosomal L1 protein
30	Gi15807570 (DR_2588)	Iron ABC transporter
31	Gi15805727 (DR_0700)	V-type ATPase subunit A
32	Gi361132441 -	Chain A, Metalloproteinase, light chain (<i>Mus Musculus</i>)
33	Gi5542160 -	Chain L, Campath-1h, light chain (<i>Homo sapiens</i>)
34	Gi15807049 (DR_2055)	Endopeptidase F
35	Gi15805338 (DR_0309)	Elongation factor Tu
36	Gi11387153 (DR_2059)	Glycine-tRNA-ligase
37	Gi15807492 (DR_2507)	Medium fatty acid CoA ligase
38	Gi15807619 (DR_0126)	DnaJ
39	Gi15806494	Hypothetical DR-1481
40	Gi15805727 (DR_0700)	V-type ATPase subunit A
41	Gi15806081 (DR_1061)	NADPH-quinone oxidoreductase
42	Gi15807095	Hypothetical DR-2101
43	NI	NI

44	Gi15806965 (DR_1967)	Enoyl-acyl reductase
45	Gi6459090 (DR_1337)	Transaldolase
46	Gi15807812 (DR_A0143)	3-hydroxybutyryl-CoA dehydrogenase
47	Gi15807570 (DR_2588)	Iron ABC transporter
48	Gi15807560 (DR_2577)	S-layer protein
49	Gi15807431 (DR_2444)	Nucleic acid binding protein HRDC family
50	Gi15806800 (DR_1799)	Translation IF-2
51	Gi15805124 (DR_0083)	2-oxoglutarate dehydrogenase E2 component
52	Gi15806525 (DR_1513)	30S ribosomal S2 protein
53	Gi15806739 (DR_1736)	2',3'-cyclic 2'phosphodiesterase
54	Gi15807551 (DR_2567)	N-acetylmuramoyl-L-Ala amidase
55	Gi15806336 (DR_1318)	Acyl-CoA dehydrogenase
56	Gi15806868 (DR_1868)	Penicillin binding protein 2
57	Gi15806445 (DR_1428)	Acetyl-CoA acetyl transferase
58	Gi15806102 (DR_1082)	Light-repressed protein A
59	Gi15807254 (DR_2263)	DNA-binding stress response protein Dps family
60	Gi15806769	Hypothetical DR-1768
61	Gi15805608	Hypothetical DR-0581
62	Gi15805608	Hypothetical DR-0581
63	Gi15806486 (DR_1473)	Phage shock protein A
64	Gi15807111 (DR_2117)	Adenylate kinase
65	Gi15806218 (DR_1199)	Protease I
66	Gi15807039 (DR_2045)	50S ribosomal L1 protein
67	Gi15805872 (DR_0846)	Bacterioferritin comigratory protein
68	Gi15807466	Acetyl-CoA acetyltransferase

	(DR_2480)	
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Supplementary Table 1

Spots (1-68) collected after 2D electrophoresis of protein extracts isolated from cells grown for 15 or 19 h in TGY medium or in the same medium supplemented with 5 μ M MnCl₂. The corresponding gene identities and functions are also indicated. NI: not identified.

Spot	Feature	Identity	Function
1	Only in Control	Gi10957459 (DR_B0067)	Nuclease (extracellular)
2	Only in Control	Gi15805352 (DR_0323)	50S ribosomal L5 protein
4	Over in Control	Gi15806486 (DR_1473) Gi15807160 (DR_2166)	Phage shock protein A Purine nucleoside Pase
25	Only in Control	Gi15806580 (DR_1571)	Peptide ABC transporter
28	Only in Control	Gi15807826 (DR_A0157)	Phosphate ABC transporter
29	Only in Control	Gi15807039 (DR_2045)	50S ribosomal L1 protein

Supplementary Table ST2

Effect of manganese towards *D. radiodurans* proteome. Proteins selectively expressed after 15 h of growth in TGY medium not supplemented with manganese (control medium). Proteins detected in spots absent in the other gel (relative to TGY medium supplemented with manganese) are indicated as "Only in Control". Proteins detected in spots whose intensity was at least 2-fold higher or lower than the matched spot on the other gel (relative to TGY medium supplemented with manganese) are indicated as "Over in Control".

Spot	Feature	Identity	Function
6	Only in Mn	Gi15807721 (DR_A0053) Gi15806895 (DR_1895)	AcCoA transferase Alanine-DH
9	Only in Mn	Gi15805079 (DR_0038)	Serine-OH methyl transferase
10	Only in Mn	Gi15806798 (DR_1797)	NusA
31	Only in Mn	Gi15805727 (DR_0700)	V-type ATPase subunit A
34	Only in Mn	Gi15807049 (DR_2055)	Oligo Endopeptidase F
36	Only in Mn	Gi11387153 (DR_2059)	Glycine-tRNA-ligase
37	Only in Mn	Gi15807492 (DR_2507)	Medium fatty acid CoA ligase
38	Only in Mn	Gi15807619 (DR_0126)	DnaJ

Supplementary Table ST3

Effect of manganese towards *D. radiodurans* proteome. Proteins selectively expressed after 15 h of growth in TGY medium supplemented with 5 μ M MnCl₂. Proteins detected in spots absent in the other gel (relative to TGY control medium) are indicated as "Only in Mn".

Spot	Feature	Identity	Function
11	Only in Control	Gi10957459 (DR_B0067)	Nuclease (extracellular)
12	Over in Control	Gi15807466 (DR_2480)	AcCoA acetyltransferase
13	Only in Control	Gi15805352 (DR_0323)	50S ribosomal L5 protein
40	Only in Control	Gi15805727 (DR_0700)	V-type ATPase subunit A
41	Only in Control	Gi15806081 (DR_1061)	NADPH-quinone oxidoreductase
44	Over in Control	Gi15806965 (DR_1967)	Enoyl-acyl reductase
45	Over in Control	Gi6459090 (DR_1337)	Transaldolase
46	Over in Control	Gi15807812 (DR_A0143)	3-OH butyryl-CoA DH
47	Only in Control	Gi15807570 (DR_2588)	Iron ABC transporter

Supplementary Table ST4

Effect of manganese towards *D. radiodurans* proteome. Proteins selectively expressed after 19 h of growth in TGY medium not supplemented with manganese (control medium). Proteins detected in spots absent in the other gel (relative to TGY medium supplemented with manganese) are indicated as "Only in Control". Proteins detected in spots whose intensity was at least 2-fold higher or lower than the matched spot on the other gel (relative to TGY medium supplemented with manganese) are indicated as "Over in Control".

Spot	Feature	Identity	Function
17	Only in Mn	Gi970087 (clone pkDR1)	Catalase
18	Only in Mn	Gi15806739 (DR_1736)	2'-3'-cyclic Pi-esterase
21	Only in Mn	Gi15807375 (DR_2384)	Phenyl-Ac degradation (PaaB)
23	Only in Mn	Gi15807944 (DR_A0283)	S-Protease
24	Over in Mn	Gi15806798 (DR_1797)	NusA
48	Only in Mn	Gi15807560 (DR_2577)	S-layer protein
49	Only in Mn	Gi15807431 (DR_2444)	Nucleic acid binding protein
50	Over in Mn	Gi15806800 (DR-1799)	Translation IF-2
51	Only in Mn	Gi15805124 (DR_0083)	2-oxoglutarate DH E2 component
52	Only in Mn	Gi15806525 (DR_1513)	30S ribosomal S2 protein
53	Over in Mn	Gi15806739 (DR_1736)	2',3'-cyclic 2' Pi esterase
54	Over in Mn	Gi15807551 (DR_2567)	N-acetylmuramoyl-L-Ala amidase
55	Only in Mn	Gi15806336 (DR_1318)	Acyl-CoA DH
56	Only in Mn	Gi15806868 (DR_1868)	Penicillin binding protein 2
57	Over in Mn	Gi15806445 (DR_1428)	AcCoA acetyltransferase
58	Only in Mn	Gi15806102 (DR_1082)	Light-repressed protein A
59	Over in Mn	Gi15807254 (DR_2263)	DNA-binding stress response
63	Over in Mn	Gi15806486 (DR_1473)	Phage shock protein A
64	Over in Mn	Gi15807111 (DR_2117)	Adenylate kinase
65	Over in Mn	Gi15806218 (DR_1199)	Protease I
67	Over in Mn	Gi15805872 (DR_0846)	Bacterioferritin comigratory prot.

Supplementary Table ST5

Effect of manganese towards *D. radiodurans* proteome. Proteins selectively expressed after 19 h of growth in TGY medium supplemented with 5 μ M MnCl₂. It should be noted that spots 18 and 53 did contain the same protein (DR_1736). However, a significantly different pI for these two esterases was observed, i.e. equal to 6-6.25 and 5.5-6 for the enzyme identified in spot 18 and 53, respectively (see Fig. 5b). Proteins detected in spots absent in the other gel (relative to TGY control medium) are indicated as "Only in Mn". Proteins detected in spots whose intensity was at least 2-fold higher or lower than the matched spot on the other gel (relative to TGY control medium) are indicated as "Over in Mn".