

# The GARD™ skin Assay: Investigation of the Applicability Domain for Metals

## Supplementary Data

**Tab. S1: List of up- and down-regulated genes for respective metal sensitizer**

N DEG: Number of differentially expressed genes.

Chemical	N DEG	Down-regulated genes	Up-regulated genes
<b>Cisplatin</b>	131	ACLY, ALDH18A1, ALDH1B1, ANAPC1..LOC730268, ANAPC5, BCL7A, BLMH, C1orf174, CARM1, CYP51A1, DDX19A, DDX21, DHCR24, DHX33, DNAJC9, DTD1, FAM86A, FASN, GAS2L3, GNPAT1, GTF3C2, HIST1H1C, HIST1H1E, HIST1H3G, HIST1H3J..HIST1H3F..HIST1H3..., HIST1H4A..HIST2H4B..HIST4H4..., HIST2H2AA3..HIST2H2AA4_x1, HIST2H2AA3..HIST2H2AA4_x2, HMGB3, HMGCRC, HMGCSC1, HNRNPL, ISG20L2, KIAA0226L, LOC100996496..SFPQ, LRPPRC, METTL2A, MRPL30..C2orf15, MRPL4, MRPS17, MTR, MYBBP1A, NIP7, NOL6, NUBPL, NUFIP1, NUP153, PASK, PFAS, PNO1, POLR2E, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPF2P1, SERBP1, SLC25A32, SLC37A4, SLC5A6, SMPD4, SNHG1..SNORD26..SNORD22..SN..., SNHG12..SNORA16A..SNORA61....., SREBF2, SRP72P2, TMEM97, TOMM40, USP10, YBX1P1	ABHD5, ACER2, ANKRA2, ARHGAP9, ASB7, ATP6V0D1, ATP6V0E1, BIN2, C9orf89, CD33, CD86, CD93, DNAJC5, EDEM2, FAM212B, FAS, FDPSP2..FDPSP7, FDXR, FOXO4, FTH1P5, GLRX, HBP1, HIST1H2AE, HIST2H2BF, IRS2, ISCU, KCNE3, LPAR1, LY96, MAPK13, MIR4271..C3orf62, NLRP12, NRBP1, NUDT14, PDE1B, PHLDA3, PIK3AP1, PINK1, PPM1D, PREX1, PSTPIP1, RENBP, RNF146, RNF24, RXRA, SCARB2, SNORA45, SNX27, ST3GAL6, TBCEL, TLR6, TMEM150B, TMEM59, TP53I3, TP53INP1, TWF2, X8140170, X8145244, ZNF211, ZNF223, ZNF561, ZNF79
<b>Cobalt chloride</b>	180	ACLY, ALDH18A1, ALDH1B1, ANAPC1..LOC730268, ANAPC5, ARHGAP9, C19orf54, C1orf174, CARM1, CD33, CD93, CYP51A1, DDX19A, DDX21, DHCR24, DHCR7, DHX33, DNAJC9, DTD1, FAM86A, FAS, FASN, FDXR, GDF11, GNL3L, GNPAT1, GTF3C2, HIST1H1C, HIST1H1E, HIST1H3G, HIST1H3J..HIST1H3F..HIST1H3..., HIST1H4A..HIST2H4B..HIST4H4..., HIST2H2AA3..HIST2H2AA4_x1, HIST2H2AA3..HIST2H2AA4_x2, HMGB3, HNRNPL, ISG20L2, KIAA0226L, LOC100996496..SFPQ, LRPPRC, METTL2A, MRPL30..C2orf15, MRPL4, MRPS17, MTR, MYBBP1A, NIP7, NOL6, NUBPL, NUFIP1, PASK, PAWR, PFAS, PNO1, POLR2E, PSTPIP1, RAB33B, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPF2P1, RPUSD2, RRP12, SERBP1, SLC25A32, SLC37A4, SLC5A6, SMPD4, SNHG1..SNORD26..SNORD22..SN..., SPRY2, SQLE, SREBF2, SRP72P2, ST3GAL6, TAPT1, TMEM97, TOMM34, TOMM40, TP53I3, USP10, VARS_x1, VARS_x2, YBX1P1, ZNF561	AAMDC, ABAT, ABHD5, ACER2, ACTR10, ADAM20, ALKBH6, ANKRA2, ARFGAP3, ASB7, ATP6V0D1, ATP6V0E1, ATP6V1H, BIN2, BLMH, C12orf57, C20orf24, C9orf89, CD86, COX20, CRHBP, CSGALNACT2, DDRGK1, DNAJB4, DNAJB9, DNAJC5, EMC7, FAM212B, FBXO10..RP11.613M10.8, FDPSP2..FDPSP7, FOXO4, FTH1P2, FTH1P5, FUCA2, GDAP2, GLRX, GSR, HBP1, HIST1H2AE, HIST1H2BE..HIST1H2BC..HIST1..., HIST2H2BF, HMGCRC, HMGCSC1, HMOX1, IRS2, ISCU, KCNE3, KGFLP1..KGFLP2..RP11.204M4...., LOC100499405..RP11.118B22.3..., LOC101060521..POLR3E, LPAR1, LY96, MAP2K1, MAPK13, MGST3..LOC100505828, MIR4271..C3orf62, MSANTD2, NBR1, NLRP12, NQO1, NRBP1, NUP153, OR5B21, OSER1..C20orf111, PDE1B, PHLDA3, PINK1, PPM1D, PREX1, RENBP, RNF146, RNF24, RXRA, SLC35B3, SNORA45, STK17B, TAS2R5, TBCEL, TCTN2, TLR6, TLR9, TMEM150B, TMEM55A, TMEM59, TP53INP1, TWF2, TXNRD1, VAMP3, VPS37A, X8133549, X8140170, X8145244, ZNF211, ZNF223, ZNF79
<b>Diammonium hexachloroplatinate</b>	121	ACLY, ALDH18A1, ALDH1B1, ANAPC1..LOC730268, ANAPC5, BCL7A, BLMH, C19orf54, C1orf174, CARM1, COX20, DDX19A, DHCR24, DHCR7, DHX33, DNAJC9, DTD1, FDXR, GAS2L3, GDF11, GNL3L, GTF3C2,	ABHD5, ACTR10, ARHGAP9, ATP6V0D1, ATP6V0E1, ATP6V1H, C12orf57, C20orf24, C9orf89, CD33, CD86, CD93, CSGALNACT2, DDRGK1, DNAJC5, EDEM2, EMC7, EVI2B, FAM212B, FAS, FOXO4, FTH1P2, FUCA2,

		HIST1H1C, HIST1H1E, HIST1H2BE..HIST1H2BC..HIST1..., HIST1H3G, HIST1H3J..HIST1H3F..HIST1H3..., HIST1H4A..HIST2H4B..HIST4H4..., HIST2H2AA3..HIST2H2AA4_x1, HIST2H2AA3..HIST2H2AA4_x2, HMGB3, HMGCR, HMGCS1, HNRNPL, KIAA0226L, LOC100996496..SFPQ, LRPPRC, METTL2A, MRPL30..C2orf15, MTR, NUBPL, NUFIP1, NUP153, PASK, PFAS, POLR2E, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPSA..SNORA62..SNORA6, SLC37A4, SMPD4, SNHG1..SNORD26..SNORD22..SN..., SREBF2, TMEM97, TOMM34, USP10, YBX1P1	GDAP2, GLRX, GSR, HIST2H2BF, HMOX1, IRS2, KCNE3, LPAR1, LY96, MAP2K1, MAPK13, MGST3..LOC100505828, MIR4271..C3orf62, NLRP12, NQO1, NRBP1, PDE1B, PHLDA3, PIK3AP1, PSTPIP1, RENBP, RNF24, RRP12, RXRA, SLC35B3, SNX27, SQLE, ST3GAL6, STK17B, TAPT1, TLR6, TMEM55A, TMEM59, TP53INP1, TWF2, VPS37A, X8145244, ZNF561, ZNF79
<b>Nickel (II) sulphate hexahydrate</b>	144	ACLY, ACTR10, ALDH18A1, ALDH1B1, ANAPC1..LOC730268, ANAPC5, BLMH, C1orf174, C20orf24, CARM1, DDX19A, DDX21, DHCR24, DHCR7, DHX33, DNAJC9, DTD1, FAM86A, FASN, FUCA2, GDF11, GNL3L, GNPAT1, GTF3C2, HIST1H1C, HIST1H3G, HIST1H3J..HIST1H3F..HIST1H3..., HIST1H4A..HIST2H4B..HIST4H4..., HIST2H2AA3..HIST2H2AA4_x1, HIST2H2AA3..HIST2H2AA4_x2, HMGCR, HMGCS1, HNRNPL, ISCU, ISG20L2, KIAA0226L, LOC100996496..SFPQ, LRPPRC, METTL2A, MRPL30..C2orf15, MRPL4, MRPS17, MYBBP1A, NIP7, NOL6, NUBPL, NUFIP1, NUP153, PASK, PAWR, PDAP1, PFAS, PMM2, PNO1, POLR2E, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPF2P1, RPU2D2, RRP12, SERBP1, SLC25A32, SLC37A4, SLC5A6, SMPD4, SNHG1..SNORD26..SNORD22..SN..., SNHG12..SNORA16A..SNORA61....., SPRY2, SRP72P2, TAPT1, TMEM97, TOMM34, TOMM40, USP10, VARS_x1, VARS_x2, YBX1P1	AAMDC, ABAT, ABHD5, ADAM20, ALKBH6, ARFGAP3, BIN2, C12orf57, C9orf89, CD33, CD86, CD93, CSGALNACT2, DNAJB4, DNAJB9, EDEM2, FAM212B, FDPSP2..FDPSP7, FOXO4, FTH1P2, FTH1P5, GSR, HBP1, HIST2H2BF, HMOX1, IRS2, KCNE3, LPAR1, MAP2K1, MAPK13, MGST3..LOC100505828, MIR4271..C3orf62, NBR1, NLRP12, NQO1, NUDT14, OSER1..C20orf111, PDE1B, PHLDA3, PIK3AP1, PINK1, PREX1, PSTPIP1, RENBP, RNF24, RPSA..SNORA62..SNORA6, RXRA, SNORA45, SNX27, SREBF2, ST3GAL6, STK17B, TAS2R5, TCTN2, TLR6, TMEM150B, TMEM59, TP53INP1, TWF2, TXNRD1, X8133549, X8140170, X8145244, ZNF211, ZNF79
<b>Palladium di(4-oxopent-2-en-2-oate)</b>	106	ACLY, ALDH18A1, ALDH1B1, ANAPC5, BCL7A, BLMH, C19orf54, C1orf174, CARM1, COX20, DDX19A, DHCR24, DHCR7, DHX33, DTD1, FAM86A, FDXR, GDF11, GNL3L, GTF3C2, HIST1H1C, HIST1H1E, HIST1H2BE..HIST1H2BC..HIST1..., HIST1H3G, HIST1H3J..HIST1H3F..HIST1H3..., HIST1H4A..HIST2H4B..HIST4H4..., HIST2H2AA3..HIST2H2AA4_x1, HIST2H2AA3..HIST2H2AA4_x2, HMGB3, HMGCR, HMGCS1, HNRNPL, ISCU, LOC100996496..SFPQ, METTL2A, MRPL30..C2orf15, MRPL4, MRPS17, MTR, NIP7, NUBPL, NUFIP1, PDAP1, PFAS, POLR2E, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPSA..SNORA62..SNORA6, SLC37A4, SMPD4, SNHG1..SNORD26..SNORD22..SN..., SREBF2, TMEM97, TOMM34, TOMM40, TP53I3, USP10, VARS_x2, X7966223, YBX1P1	ATP6V0D1, ATP6V0E1, ATP6V1H, BIN2, C12orf57, C20orf24, C9orf89, CD33, CD86, CD93, CSGALNACT2, DNAJB4, EDEM2, EMC7, EVI2B, FTH1P2, FUCA2, GDAP2, GLRX, GSR, HMOX1, KCNE3, LPAR1, LY96, MAP2K1, MAPK13, MGST3..LOC100505828, MIR4271..C3orf62, NBR1, NLRP12, NQO1, NUDT14, PIK3AP1, PSTPIP1, RXRA, SPRY2, SQLE, ST3GAL6, TAPT1, TLR6, TWF2, TXNRD1, VPS37A, X8133549
<b>Potassium dichromate</b>	141	AAMDC, ABAT, ACLY, ALDH18A1, ALDH1B1, ANAPC1..LOC730268, ANAPC5, ATP6V0E1, BIN2, BLMH, C1orf174, CARM1, COX20, CYP51A1, DDX19A, DHCR24, DHCR7, DHX33, DTD1, EDEM2, FAM86A, FUCA2, GDF11, GLRX, GNL3L, GNPAT1, GTF3C2, HIST1H1C, HIST1H1E, HIST1H3G, HIST1H3J..HIST1H3F..HIST1H3..., HIST1H4A..HIST2H4B..HIST4H4..., HIST2H2AA3..HIST2H2AA4_x1, HIST2H2AA3..HIST2H2AA4_x2, HMGCS1, ISG20L2, KCNE3, LOC100996496..SFPQ, LRPPRC, METTL2A, MGST3..LOC100505828, MRPL30..C2orf15, MRPL4, MRPS17, MTR,	ABHD5, ACER2, ADAM20, ANKRA2, ASB7, C12orf57, C9orf89, CD33, CD86, CRHBP, CSGALNACT2, DNAJB4, DNAJC5, DRAM2, EMC7, FAM212B, FAS, FBXO10..RP11.613M10.8, FDPSP2..FDPSP7, FDXR, FOXO4, FTH1P2, FTH1P5, GDAP2, HBP1, HIST1H2BE..HIST1H2BC..HIST1..., HIST2H2BF, HMOX1, IRS2, ISCU, KGFLP1..KGFLP2..RP11.204M4....., LPAR1, MAP2K1, MAPK13, MIR4271..C3orf62, MSANTD2, NBR1, NQO1, OR5B21, OSER1..C20orf111, PDE1B, PHLDA3, PIK3AP1, PPM1D, PREX1, RAB33B, RNF146, RNF24, RXRA, SNORA45, ST3GAL6,

		MYBBP1A, NIP7, NOL6, NUBPL, NUFIP1, PASK, PAWR, PDAP1, PFAS, PNO1, POLR2E, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPF2P1, RPUSD2, RRP12, SLC25A32, SLC37A4, SLC5A6, SREBF2, SRP72P2, TMEM97, TOMM34, TOMM40, UFC1, VARS_x1, VARS_x2, YBX1P1	STK17B, TBCEL, TLR6, TLR9, TMEM55A, TMEM59, TP53INP1, TXNRD1, X8133549, X8140170, X8145244, ZNF211, ZNF223, ZNF561, ZNF79
<b>Tetraammine palladium (II) hydrogen carbonate</b>	110	ACLY, ALDH18A1, ALDH1B1, ANAPC1..LOC730268, ANAPC5, ATP6V0D1, BLMH, C1orf174, CARM1, DDX19A, DHCR24, DHCR7, DHX33, DNAJC9, DTD1, FASN, FDXR, GAS2L3, GDF11, GNL3L, GNPAT1, GTF3C2, HIST1H1C, HIST1H1E, HIST1H3J..HIST1H3F..HIST1H3...., HIST1H4A..HIST2H4B..HIST4H4...., HIST2H2AA3..HIST2H2AA4_x2, HMGB3, HMGCR, HMGCS1, HNRNPL, ISCU, ISG20L2, KIAA0226L, LOC100996496..SFPQ, METTL2A, MRPL30..C2orf15, MRPL4, MRPS17, MYBBP1A, NIP7, NOL6, NUFIP1, PASK, PDAP1, PFAS, PHLDA3, PMM2, PNO1, POLR2E, RFC2, RNASEH1, RNF26, RP11.267J23.4, RPUSD2, SLC25A32, SLC37A4, SLC5A6, SMPD4, SNHG1..SNORD26..SNORD22..SN...., SNHG12..SNORA16A..SNORA61....., TMEM97, TOMM34, TOMM40, TP53I3, USP10, VARS_x2, YBX1P1	ACTR10, ADAM20, ATP6V1H, BIN2, C12orf57, C9orf89, COX7A2L, CSGALNACT2, DNAJB4, DRAM2, FDPSP2..FDPSP7, FOXO4, FTH1P2, FTH1P5, GLRX, GSR, HBP1, HMOX1, IRS2, KCNE3, LY96, NBR1, NLRP12, NQO1, NUDT14, PIK3AP1, PREX1, RENBP, RNF146, RNF24, RXRA, SNORA45, ST3GAL6, TCTN2, TLR6, TMEM150B, TMEM59, TWF2, TXNRD1, VPS37A, X8133549, X8145244