Data S1 | Supplemental references for figures 1 and 2

Figure 1. The chemical diversity of human PARP metabolism.

Site	PARP	Reference
Cys	PARP7	Rodriguez, K. M., Buch-Larsen, S. C., Kirby, I. T., Siordia, I. R., Hutin, D., Rasmussen, M., Grant, D. M., David, L. L., Matthews, J., Nielsen, M. L., & Cohen, M. S. (2021). Chemical genetics and proteome-wide site mapping reveal cysteine MARylation by PARP-7 on immune-relevant protein targets. *ELife*, *10*, 1–94.
	PARP6, 8, 11, 12, and 16	Vyas, S., Matic, I., Uchima, L., Rood, J., Zaja, R., Hay, R. T., Ahel, I., & Chang, P. (2014). Family-wide analysis of poly(ADP-ribose) polymerase activity. *Nature Communications 2014 5:1*, *5*(1), 1–13.
	PARP8 (inferred from the high abundance of PARP8 Cys sites in cells)	Buch-Larsen, S. C., Hendriks, I. A., Lodge, J. M., Rykær, M., Furtwängler, B., Shishkova, E., Westphall, M. S., Coon, J. J., & Nielsen, M. L. (2020). Mapping Physiological ADP-Ribosylation Using Activated Ion Electron Transfer Dissociation. *Cell Reports*, *32*(12).
	PARP14	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
Asp /Glu	PARP1, 10, and 14	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
	PARP3, 6, 10, 11, 12, and 16	Vyas, S., Matic, I., Uchima, L., Rood, J., Zaja, R., Hay, R. T., Ahel, I., & Chang, P. (2014). Family-wide analysis of poly(ADP-ribose) polymerase activity. *Nature Communications 2014 5:1*, *5*(1), 1–13.
Asp /Glu	PARP5	Eisemann, T., Langelier, M. F., & Pascal, J. M. (2019). Structural and functional analysis of parameters governing tankyrase-1 interaction with telomeric repeat-binding factor 1 and GDP-mannose 4,6-dehydratase. *Journal of Biological Chemistry*, *294*(40), 14574–14590.
	Analog-sensitive PARP1, 2, and 3	Gibson, B. A., Zhang, Y., Jiang, H., Hussey, K. M., Shrimp, J. H., Lin, H., Schwede, F., Yu, Y., & Kraus, W. L. (2016). Chemical genetic discovery of PARP targets reveals a role for PARP-1 in transcription elongation. *Science*, *353*(6294), 45–50.
	Analog-sensitive PARP7	Palavalli Parsons, L. H., Challa, S., Gibson, B. A., Nandu, T., Stokes, M. S., Huang, D., Lea, J. S., & Lee Kraus, W. (2021). Identification of PARP-7 substrates

Asp /Glu		reveals a role for marylation in microtubule control in Ovarian cancer cells. *ELife*, *10*, 1–61.
	Analog-sensitive PARP14	Carter-O’Connell, I., Vermehren-Schmaedick, A., Jin, H., Morgan, R. K., David, L. L., & Cohen, M. S. (2018). Combining Chemical Genetics with Proximity-Dependent Labeling Reveals Cellular Targets of Poly(ADP-ribose) Polymerase 14 (PARP14). *ACS Chemical Biology*, *13*(10), 2841–2848.
	PARP16	Challa, S., Khulpateea, B. R., Nandu, T., Camacho, C. v., Ryu, K. W., Chen, H., Peng, Y., Lea, J. S., & Kraus, W. L. (2021). Ribosome ADP-ribosylation inhibits translation and maintains proteostasis in cancers. *Cell*, *184*(17), 4531-4546.e26.
His	PARP10 and 14	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
Lys	PARP1, 10, and 14	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
	PARP3, 10, 11, and 16	Vyas, S., Matic, I., Uchima, L., Rood, J., Zaja, R., Hay, R. T., Ahel, I., & Chang, P. (2014). Family-wide analysis of poly(ADP-ribose) polymerase activity. *Nature Communications 2014 5:1*, *5*(1), 1–13.
Arg	PARP10 and 14	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
Ser	PARP1/HPF1	Bonfiglio, J. J., Fontana, P., Zhang, Q., Colby, T., Gibbs-Seymour, I., Atanassov, I., Bartlett, E., Zaja, R., Ahel, I., & Matic, I. (2017). Serine ADP-Ribosylation Depends on HPF1. *Molecular Cell*, *65*(5), 932-940.e6. Bonfiglio, J. J., Leidecker, O., Dauben, H., Longarini, E. J., Colby, T., San Segundo-Acosta, P., Perez, K. A., & Matic, I. (2020). An HPF1/PARP1-Based Chemical Biology Strategy for Exploring ADP-Ribosylation. *Cell*, *183*(4), 1086-1102.e23. Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The

		regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
	PARP2 is assumed to be redundant with PARP1 because it also forms a complex with HPF1	Gibbs-Seymour, I., Fontana, P., Rack, J. G. M., & Ahel, I. (2016). HPF1/C4orf27 Is a PARP-1-Interacting Protein that Regulates PARP-1 ADP-Ribosylation Activity. *Molecular Cell*, *62*(3), 432–442. Suskiewicz, M. J., Zobel, F., Ogden, T. E. H., Fontana, P., Ariza, A., Yang, J. C., Zhu, K., Bracken, L., Hawthorne, W. J., Ahel, D., Neuhaus, D., & Ahel, I. (2020). HPF1 completes the PARP active site for DNA damage-induced ADP-ribosylation. *Nature 2020 579:7800*, *579*(7800), 598–602. Kurgina, T. A., Moor, N. A., Kutuzov, M. M., & Lavrik, O. I. (2022). The HPF1-dependent histone PARylation catalyzed by PARP2 is specifically stimulated by an incised AP site-containing BER DNA intermediate. *DNA Repair*, *120*, 103423.
Thr	Thr-ADPr is abolished by HPF1 KO	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
Tyr	PARP1/HPF1	Bonfiglio, J. J., Leidecker, O., Dauben, H., Longarini, E. J., Colby, T., San Segundo-Acosta, P., Perez, K. A., & Matic, I. (2020). An HPF1/PARP1-Based Chemical Biology Strategy for Exploring ADP-Ribosylation. *Cell*, *183*(4), 1086-1102.e23.
	PARP10 and 14	Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.
	PARP14 (inferred from the high abundance of PARP14 Tyr sites in cells)	Buch-Larsen, S. C., Hendriks, I. A., Lodge, J. M., Rykær, M., Furtwängler, B., Shishkova, E., Westphall, M. S., Coon, J. J., & Nielsen, M. L. (2020). Mapping Physiological ADP-Ribosylation Using Activated Ion Electron Transfer Dissociation. *Cell Reports*, *32*(12).
Evidence for a 1’->2’ rearrangement by Asp/Glu-ADPr		K. Morgan, R., & S. Cohen, M. (2015). A Clickable Aminooxy Probe for Monitoring Cellular ADP-Ribosylation. *ACS Chemical Biology*, *10*(8), 1778–1784.
MacroD1/D2 erase Asp/Glu-ADPr		Jankevicius, G., Hassler, M., Golia, B., Rybin, V., Zacharias, M., Timinszky, G., & Ladurner, A. G. (2013). A family of macrodomain proteins reverses

	cellular mono-ADP-ribosylation. *Nature Structural & Molecular Biology 2013 20:4*, *20*(4), 508–514. Weixler, L., Ikenga, N. J., Voorneveld, J., Aydin, G., Mhr Bolte, T., Momoh, J., Bütepage, M., Golzmann, A., Lüscher, B., Filippov, D. v, Rokožaja, R. R., & Feijs, K. L. (2023). Protein and RNA ADP-ribosylation detection is influenced by sample preparation and reagents used. *Life Science Alliance*, *6*(1), e202201455.
TARG1 erases Asp/Glu-ADPr and PAR chains from PARP1	Sharifi, R., Morra, R., Denise Appel, C., Tallis, M., Chioza, B., Jankevicius, G., Simpson, M. A., Matic, I., Ozkan, E., Golia, B., Schellenberg, M. J., Weston, R., Williams, J. G., Rossi, M. N., Galehdari, H., Krahn, J., Wan, A., Trembath, R. C., Crosby, A. H., … Ahel, I. (2013). Deficiency of terminal ADP-ribose protein glycohydrolase TARG1/C6orf130 in neurodegenerative disease. *The EMBO Journal*, *32*(9), 1225–1237.
ARH1 erases Arg-ADPr	Moss, J., Tsai, S. chen, Adamik, R., Chen, H. chia, & Stanley, S. J. (1988). Purification and Characterization of ADP-ribosylarginine Hydrolase from Turkey Erythrocytes. *Biochemistry*, *27*(15), 5819–5823. Weixler, L., Ikenga, N. J., Voorneveld, J., Aydin, G., Mhr Bolte, T., Momoh, J., Bütepage, M., Golzmann, A., Lüscher, B., Filippov, D. v, Rokožaja, R. R., & Feijs, K. L. (2023). Protein and RNA ADP-ribosylation detection is influenced by sample preparation and reagents used. *Life Science Alliance*, *6*(1), e202201455.
ARH3 erases Ser-ADPr	Fontana, P., Bonfiglio, J. J., Palazzo, L., Bartlett, E., Matic, I., & Ahel, I. (2017). Serine ADP-ribosylation reversal by the hydrolase ARH3. *ELife*, *6*. Voorneveld, J., Rack, J. G. M., Ahel, I., Overkleeft, H. S., van der Marel, G. A., & Filippov, D. v. (2018). Synthetic α- And β-Ser-ADP-ribosylated Peptides Reveal α-Ser-ADPr as the Native Epimer. *Organic Letters*, *20*(13), 4140–4143. Hendriks, I. A., Buch-Larsen, S. C., Prokhorova, E., Elsborg, J. D., Rebak, A. K. L. F. S., Zhu, K., Ahel, D., Lukas, C., Ahel, I., & Nielsen, M. L. (2021). The regulatory landscape of the human HPF1- and ARH3-dependent ADP-ribosylome. *Nature Communications 2021 12:1*, *12*(1), 1–16.

	Weixler, L., Ikenga, N. J., Voorneveld, J., Aydin, G., Mhr Bolte, T., Momoh, J., Bütepage, M., Golzmann, A., Lüscher, B., Filippov, D. v, Rokožaja, R. R., & Feijs, K. L. (2023). Protein and RNA ADP-ribosylation detection is influenced by sample preparation and reagents used. *Life Science Alliance*, *6*(1), e202201455.
ARH3 degrades PAR, though it is less efficient than PARG and is unable to trim branch points	Rack, J. G. M., Liu, Q., Zorzini, V., Voorneveld, J., Ariza, A., Honarmand Ebrahimi, K., Reber, J. M., Krassnig, S. C., Ahel, D., van der Marel, G. A., Mangerich, A., McCullagh, J. S. O., Filippov, D. v., & Ahel, I. (2021). Mechanistic insights into the three steps of poly(ADP-ribosylation) reversal. *Nature Communications 2021 12:1*, *12*(1), 1–14. https://doi.org/10.1038/s41467-021-24723-3

Figure 2. An overview of the PARP family including domains, targets, and phenotypes.

Data	Reference
snoRNAs activate PARP1	Huang, D., Kim, D. S., & Kraus, W. L. (2020). Specific Binding of snoRNAs to PARP-1 Promotes NAD$^+$-Dependent Catalytic Activation. *Biochemistry*, *59*(16), 1559–1564.
DNA breaks activate PARP1, 2, and 3	Langelier, M. F., Steffen, J. D., Riccio, A. A., McCauley, M., & Pascal, J. M. (2017). Purification of DNA damage-dependent PARPs from E. coli for structural and biochemical analysis. *Methods in Molecular Biology*, *1608*, 431–444.
PAR activates PARP2	Chen, Q., Kassab, M. A., Dantzer, F., & Yu, X. (2018). PARP2 mediates branched poly ADP-ribosylation in response to DNA damage. *Nature Communications 2018 9:1*, *9*(1), 1–13.
PARP1/NMNAT1 modify histones and promote adipogenesis	Huang, D., Camacho, C. v., Setlem, R., Ryu, K. W., Parameswaran, B., Gupta, R. K., & Kraus, W. L. (2020). Functional Interplay between Histone H2B ADP-Ribosylation and Phosphorylation Controls Adipogenesis. *Molecular Cell*, *79*(6), 934-949.e14.
PARP1 modifies DDX21 and promotes ribosome biogenesis	Kim, D. S., Camacho, C. v., Nagari, A., Malladi, V. S., Challa, S., & Kraus, W. L. (2019). Activation of PARP-1 by snoRNAs Controls Ribosome Biogenesis and Cell Growth via the RNA Helicase DDX21. *Molecular Cell*, *75*(6), 1270-1285.e14.
PARP1/HPF1 modifies histones and participates in DNA repair	Palazzo, L., Suskiewicz, M. J., & Ahel, I. (2021). Serine ADP-ribosylation in DNA-damage response regulation. *Current Opinion in Genetics & Development*, *71*, 106–113.
PARP3 modifies proteins involved in transcription and RNA processing	Gibson, B. A., Zhang, Y., Jiang, H., Hussey, K. M., Shrimp, J. H., Lin, H., Schwede, F., Yu, Y., & Kraus, W. L. (2016). Chemical genetic discovery of PARP targets reveals a role

	for PARP-1 in transcription elongation. *Science*, *353*(6294), 45–50.
PARP1/2 double knockout is embryonic lethal in mice	Ménissier de Murcia, J., Ricoul, M., Tartier, L., Niedergang, C., Huber, A., Dantzer, F., Schreiber, V., Amé, J. C., Dierich, A., LeMeur, M., Sabatier, L., Chambon, P., & de Murcia, G. (2003). Functional interaction between PARP-1 and PARP-2 in chromosome stability and embryonic development in mouse. *The EMBO Journal*, *22*(9), 2255–2263.
Vault particle structure (PDB: 7PKR)	Guerra, P., González-Alamos, M., Llauró, A., Casañas, A., Querol-Audí, J., de Pablo, P. J., & Verdaguer, N. (2022). Symmetry disruption commits vault particles to disassembly. *Science Advances*, *8*(6), 7795.
PARP4 modifies the major vault protein	Kickhoefer, V. A., Siva, A. C., Kedersha, N. L., Inman, E. M., Ruland, C., Streuli, M., & Rome, L. H. (1999). The 193-Kd Vault Protein, Vparp, Is a Novel Poly(Adp-Ribose) Polymerase. *Journal of Cell Biology*, *146*(5), 917–928.
PARP4 knockout mice have abnormally small kidneys	*Parp4 Mouse Gene Details | poly (ADP-ribose) polymerase family, member 4 | International Mouse Phenotyping Consortium*. (n.d.). Retrieved October 12, 2022, from https://www.mousephenotype.org/data/genes/MGI:2685589
PARP5 participates in telomere maintenance	Cook, B. D., Dynek, J. N., Chang, W., Shostak, G., & Smith, S. (2002). Role for the Related Poly(ADP-Ribose) Polymerases Tankyrase 1 and 2 at Human Telomeres. *Molecular and Cellular Biology*, *22*(1), 332–342.
PARP5 participates in mitosis	Chang, P., Coughlin, M., & Mitchison, T. J. (2005). Tankyrase-1 polymerization of poly(ADP-ribose) is required for spindle structure and function. *Nature Cell Biology 2005 7:11*, *7*(11), 1133–1139.
PARP5 regulates Wnt signaling through PAR-dependent ubiquitination	Zhang, Y., Liu, S., Mickanin, C., Feng, Y., Charlat, O., Michaud, G. A., Schirle, M., Shi, X., Hild, M., Bauer, A., Myer, V. E., Finan, P. M., Porter, J. A., Huang, S. M. A., & Cong, F. (2011). RNF146 is a poly(ADP-ribose)-directed E3 ligase that regulates axin degradation and Wnt signalling. *Nature Cell Biology 2011 13:5*, *13*(5), 623–629.
PARP5a/b double knockout is embryonic lethal in mice	Chiang, Y. J., Hsiao, S. J., Yver, D., Cushman, S. W., Tessarollo, L., Smith, S., & Hodes, R. J. (2008). Tankyrase 1 and Tankyrase 2 Are Essential but Redundant for Mouse Embryonic Development. *PLOS ONE*, *3*(7), e2639.
PARP6 is involved in neuronal development and PARP6 knockout mice die shortly after brith	Vermehren-Schmaedick, A., Huang, J. Y., Levinson, M., Pomaville, M. B., Reed, S., Bellus, G. A., Gilbert, F., Keren, B., Heron, D., Haye, D., Janello, C., Makowski, C., Danhauser, K., Fedorov, L. M., Haack, T. B., Wright, K. M., & Cohen, M. S. (2021). Characterization of PARP6 Function in Knockout Mice and Patients with Developmental Delay. *Cells 2021, Vol. 10, Page 1289*, *10*(6), 1289.
PARP8 knockout mice have neurological defects	*Parp8 Mouse Gene Details | poly (ADP-ribose) polymerase family, member 8 | International Mouse Phenotyping*

	Consortium. (n.d.). Retrieved October 12, 2022, from https://www.mousephenotype.org/data/genes/MGI:1098713
PARP7 modifies aryl hydrocarbon receptor, androgen receptor, PARP13, tubulin, helicases, and proteins involved in the immune response	Ma, Q., Baldwin, K. T., Renzelli, A. J., McDaniel, A., & Dong, L. (2001). TCDD-Inducible Poly(ADP-ribose) Polymerase: A Novel Response to 2,3,7,8-Tetrachlorodibenzo-p-dioxin. *Biochemical and Biophysical Research Communications*, *289*(2), 499–506. Yang, C. S., Jividen, K., Kamata, T., Dworak, N., Oostdyk, L., Remlein, B., Pourfarjam, Y., Kim, I. K., Du, K. P., Abbas, T., Sherman, N. E., Wotton, D., & Paschal, B. M. (2021). Androgen signaling uses a writer and a reader of ADP-ribosylation to regulate protein complex assembly. *Nature Communications 2021 12:1*, *12*(1), 1–18. https://doi.org/10.1038/s41467-021-23055-6 Rodriguez, K. M., Buch-Larsen, S. C., Kirby, I. T., Siordia, I. R., Hutin, D., Rasmussen, M., Grant, D. M., David, L. L., Matthews, J., Nielsen, M. L., & Cohen, M. S. (2021). Chemical genetics and proteome-wide site mapping reveal cysteine MARylation by PARP-7 on immune-relevant protein targets. *ELife*, *10*, 1–94. Palavalli Parsons, L. H., Challa, S., Gibson, B. A., Nandu, T., Stokes, M. S., Huang, D., Lea, J. S., & Lee Kraus, W. (2021). Identification of PARP-7 substrates reveals a role for marylation in microtubule control in Ovarian cancer cells. *ELife*, *10*, 1–61. Gozgit, J. M., Vasbinder, M. M., Abo, R. P., Kunii, K., Kuplast-Barr, K. G., Gui, B., Lu, A. Z., Molina, J. R., Minissale, E., Swinger, K. K., Wigle, T. J., Blackwell, D. J., Majer, C. R., Ren, Y., Niepel, M., Varsamis, Z. A., Nayak, S. P., Bamberg, E., Mo, J. R., … Keilhack, H. (2021). PARP7 negatively regulates the type I interferon response in cancer cells and its inhibition triggers antitumor immunity. *Cancer Cell*, *39*(9), 1214-1226.e10.
PARP7 knockout sensitizes mice to dioxin toxicity	Hutin, D., Tamblyn, L., Gomez, A., Grimaldi, G., Soedling, H., Cho, T., Ahmed, S., Lucas, C., Kanduri, C., Grant, D. M., & Matthews, J. (2018). Hepatocyte-Specific Deletion of TIPARP, a Negative Regulator of the Aryl Hydrocarbon Receptor, Is Sufficient to Increase Sensitivity to Dioxin-Induced Wasting Syndrome. *Toxicological Sciences*, *165*(2), 347–360.
PARP9/DTX3L ADP-ribosylates ubiqutin	Yang, C. S., Jividen, K., Spencer, A., Dworak, N., Ni, L., Oostdyk, L. T., Chatterjee, M., Kuśmider, B., Reon, B.,

	Parlak, M., Gorbunova, V., Abbas, T., Jeffery, E., Sherman, N. E., & Paschal, B. M. (2017). Ubiquitin Modification by the E3 Ligase/ADP-Ribosyltransferase Dtx3L/Parp9. *Molecular Cell*, *66*(4), 503-516.e5.
PARP9 knockout sensitizes mice to RNA virus infection	Xing, J., Zhang, A., Du, Y., Fang, M., Minze, L. J., Liu, Y. J., Li, X. C., & Zhang, Z. (2021). Identification of poly(ADP-ribose) polymerase 9 (PARP9) as a noncanonical sensor for RNA virus in dendritic cells. *Nature Communications 2021 12:1*, *12*(1), 1–17.
PARP10 modifies Aurora kinase A, GSK3β, proteins involved in NF-κB signaling, RNA processing, and proteins that respond to replication stress	di Paola, S., Matarese, M., Barretta, M. L., Dathan, N., Colanzi, A., Corda, D., & Grimaldi, G. (2022). PARP10 Mediates Mono-ADP-Ribosylation of Aurora-A Regulating G2/M Transition of the Cell Cycle. *Cancers*, *14*(21), 5210. Feijs, K. L., Kleine, H., Braczynski, A., Forst, A. H., Herzog, N., Verheugd, P., Linzen, U., Kremmer, E., & Lüscher, B. (2013). ARTD10 substrate identification on protein microarrays: Regulation of GSK3β by mono-ADP-ribosylation. *Cell Communication and Signaling*, *11*(1), 1–11. Verheugd, P., Forst, A. H., Milke, L., Herzog, N., Feijs, K. L. H., Kremmer, E., Kleine, H., & Lüscher, B. (2013). Regulation of NF-κB signalling by the mono-ADP-ribosyltransferase ARTD10. *Nature Communications 2013 4:1*, *4*(1), 1–11. https://doi.org/10.1038/ncomms2672 Carter-O'Connell, I., Jin, H., Morgan, R. K., Zaja, R., David, L. L., Ahel, I., & Cohen, M. S. (2016). Identifying Family-Member-Specific Targets of Mono-ARTDs by Using a Chemical Genetics Approach. *Cell Reports*, *14*(3), 621–631. Schleicher, E. M., Galvan, A. M., Imamura-Kawasawa, Y., Moldovan, G. L., & Nicolae, C. M. (2018). PARP10 promotes cellular proliferation and tumorigenesis by alleviating replication stress. *Nucleic Acids Research*, *46*(17), 8908.
PARP11 modifies the nuclear pore complex and RNA transporters	Carter-O'Connell, I., Jin, H., Morgan, R. K., Zaja, R., David, L. L., Ahel, I., & Cohen, M. S. (2016). Identifying Family-Member-Specific Targets of Mono-ARTDs by Using a Chemical Genetics Approach. *Cell Reports*, *14*(3), 621–631.
PARP11 knockout makes mice resistant to RNA virus infection and results in male infertility	Meyer-Ficca, M. L., Ihara, M., Bader, J. J., Adrian Leu, N., Beneke, S., & Meyer, R. G. (2015). Spermatid head elongation with normal nuclear shaping requires

	ADPRibosyltransferase PARP11 (ARTD11) in mice. *Biology of Reproduction*, *92*(3), 80–81. Guo, T., Zuo, Y., Qian, L., Liu, J., Yuan, Y., Xu, K., Miao, Y., Feng, Q., Chen, X., Jin, L., Zhang, L., Dong, C., Xiong, S., & Zheng, H. (2019). ADP-ribosyltransferase PARP11 modulates the interferon antiviral response by mono-ADP-ribosylating the ubiquitin E3 ligase β-TrCP. *Nature Microbiology 2019 4:11*, *4*(11), 1872–1884.
PARP12 regulates protein transport through the ER and participates in the degradation of Zika virus proteins	Grimaldi, G., Filograna, A., Schembri, L., Monte, M. lo, Martino, R. di, Pirozzi, M., Spano, D., Beccari, A. R., Parashuraman, S., Luini, A., Valente, C., & Corda, D. (2022). PKD-dependent PARP12-catalyzed mono-ADP-ribosylation of Golgin-97 is required for E-cadherin transport from Golgi to plasma membrane. *Proceedings of the National Academy of Sciences of the United States of America*, *119*(1), e2026494119. Li, L., Zhao, H., Liu, P., Li, C., Quanquin, N., Ji, X., Sun, N., Du, P., Qin, C. F., Lu, N., & Cheng, G. (2018). PARP12 suppresses Zika virus infection through PARP-dependent degradation of NS1 and NS3 viral proteins. *Science Signaling*, *11*(535), 9332.
PARP12 knockout results in female infertility in mice	*Parp12 Mouse Gene Details | poly (ADP-ribose) polymerase family, member 12 | International Mouse Phenotyping Consortium*. (n.d.). Retrieved October 12, 2022, from https://www.mousephenotype.org/data/genes/MGI:2143990
PARP13 knockout sensitizes mice to RNA virus infection	Lee, H., Komano, J., Saitoh, Y., Yamaoka, S., Kozaki, T., Misawa, T., Takahama, M., Satoh, T., Takeuchi, O., Yamamoto, N., Matsuurag, Y., Saitoh, T., & Akira, S. (2013). Zinc-finger antiviral protein mediates retinoic acid inducible gene I-like receptor-independent antiviral response to murine leukemia virus. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(30), 12379–12384.
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