The expanding field of poly(ADP-ribosyl)ation reactions

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In the review "The expanding field of poly(ADP-ribosyl)ation reactions" by Hakmé *et al*, one of our "In need of answer" questions was: Are some poly(ADP-ribose) polymerase (PARP) family members really mono(ADP-ribose) transferases? If so, what determines their different enzymatic activity? The answer to these questions was reported in a recent issue of *Molecular Cell* (2008, **32**: 57–69) in which Kleine and co-workers showed that some of the PARP family members have transferase instead of polymerase activity. They proposed the molecular basis for substrate-assisted catalysis, which limits the activity of PARP10 to mono(ADP-ribosyl)ation. On the basis of sequence alignments, biochemical

characterization and molecular modeling using the previously reported crystal structures of PARP1, PARP2, PARP3 and PARP12 catalytic domains, the authors could subdivide the PARP family into three subfamilies. One with authentic PARP activity (PARP1, PARP2, PARP3, vPARP, Tankyrase 1 and Tankyrase 2), a second with MART activity (PARP6, TipARP, PARP-8, PARP10, PARP11, PARP12, PARP14, PARP15 and PARP16) and a third without catalytic activity (PARP9 and PARP13).

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