The objective of this core is to apply informatics to support and optimize the ISRP scientific research process, training, and methods to maximize research outcomes, applied solutions, replicable products, and sound evidence-based decision support. The core provides expert staff, platforms, services, and research support integrating five Aims:

Aim 1: Develop, maintain, and automate data management, data sharing, and quality assurance infrastructure for full reproducibility, transparency, and rigor in all ISRP studies. DMAC provides data management and research workflow platforms, automated quality assurance checks, software, and tools to ensure all ISRP publications embody NIH FAIR data sharing goals. DMAC applies informatics to continuously improve and optimize ISRP’s data management protocols, platforms, sharing, and collaborative services.

Aim 2: Support ISRP Projects and Cores with embedded expert biostatistical contributions, services, and guidance. DMAC ensures scientifically valid and rigorous statistical analysis and provides comprehensive informatics support to all ISRP investigators. Each project and core is assigned a primary faculty biostatistician with expertise in the anticipated analytical needs and a combined 22 years supporting ISRP, ensuring continuity and deep content knowledge.

Aim 3: Support the RETCC by providing guidance, resources, events, and instruction on data science and informatics to trainees and investigators. DMAC works with trainees from appointment through graduation, enhancing the development of a customized data management, informatics, and data science training plan as part of each trainee’s individual development plan. DMAC faculty provide trainees with code templates and validate scripts and analyses. DMAC and UI3 organize workshops, formal courses, and training events designed for ISRP trainees, investigators, and staff.

Aim 4: Develop novel statistical methods and associated software for data analytic challenges that impact all ISRP Projects and Cores and affiliated sciences. DMAC serves the ISRP by also developing methods for the shared issue of profile analysis of complex toxicological and metabolomic concentration profiles. DMAC will develop and refine methods for estimating the covariance matrix of congener measurements using tens of thousands of samples analyzed by the Analytical Core to date and all machine-readable samples that can be compiled from public repositories.

Aim 5: Provide the integrative data management and analytical foundations for ISRP-wide efforts to quantify, constrain, and communicate uncertainties in estimating and projecting PCB exposomes of the U.S. school-age population and currently available means for reducing them. Building on Aims 1-4 and data and tools produced by the Analytical Core and all projects to date, DMAC will develop replicable repository connections, statistical methods, software and data integration, and visualization for student PCB exposomes at census tract level considering all sources of exposure. Results will serve as the basis for transferable decision support for school districts and in national environmental health science and policy initiatives.

Attach files: □ dmac figure.pdf [2]