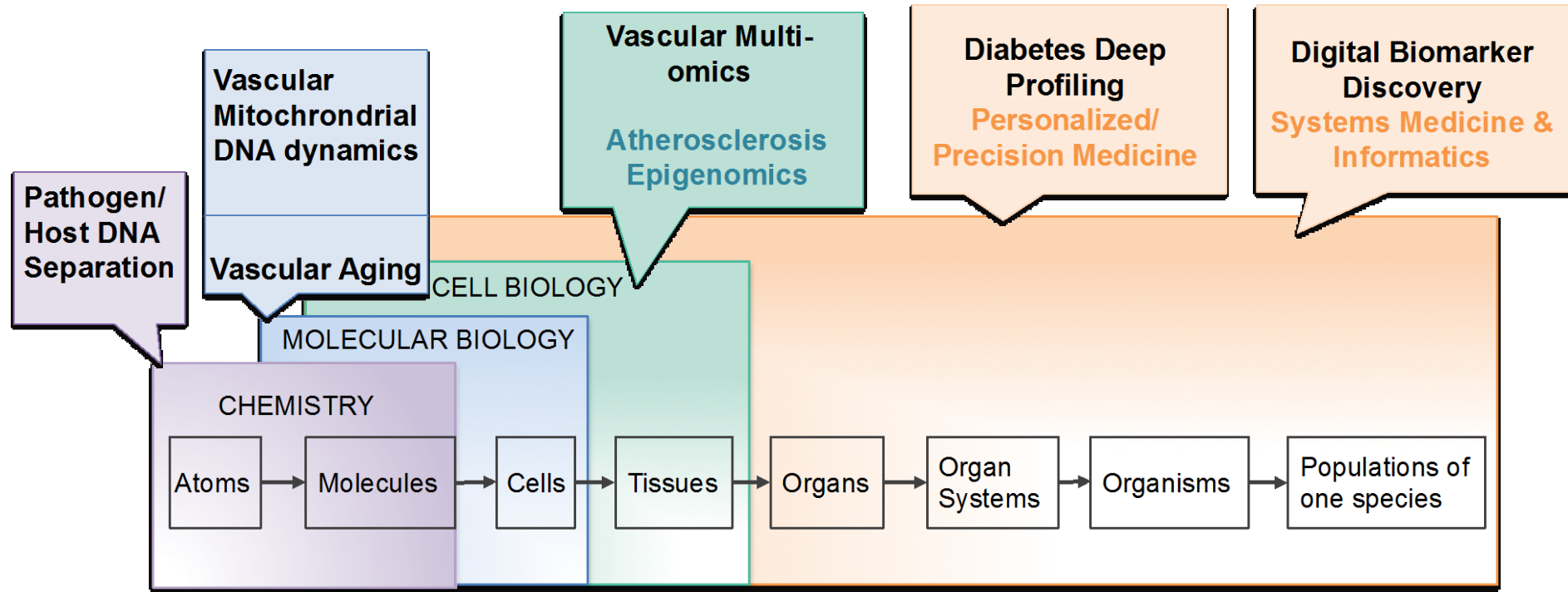


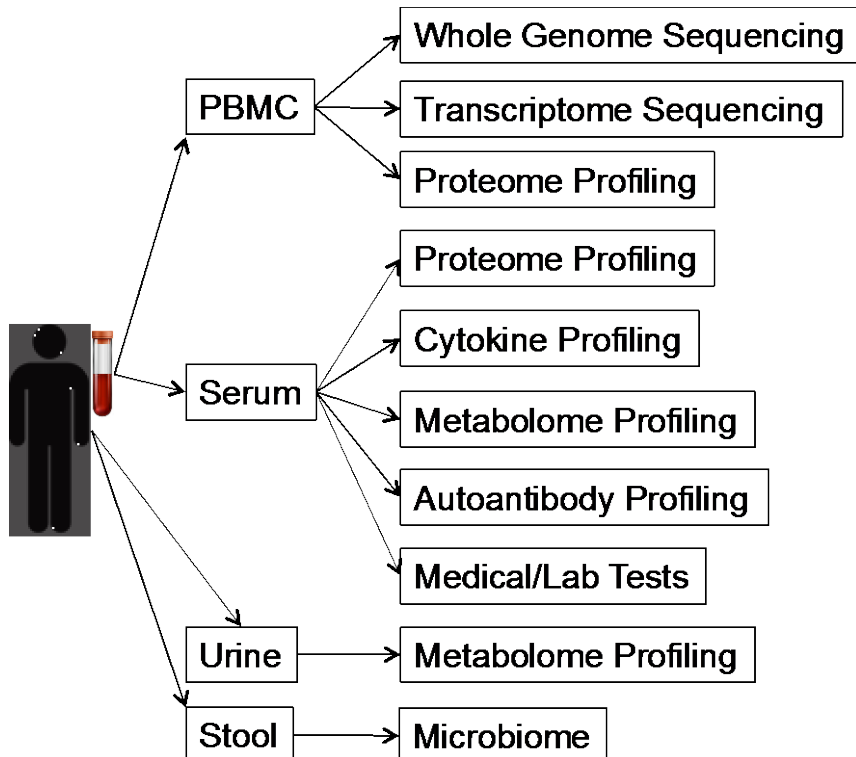
Research Overview

Integrating multimodal biomedical data

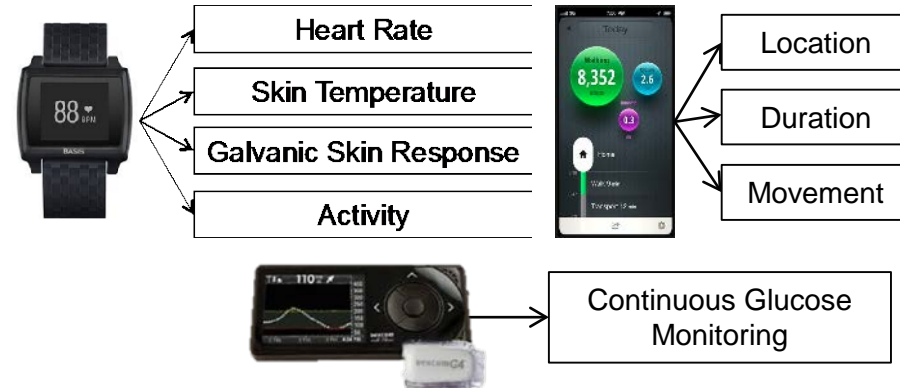


Data Types

Multi-omics



Wearable Devices



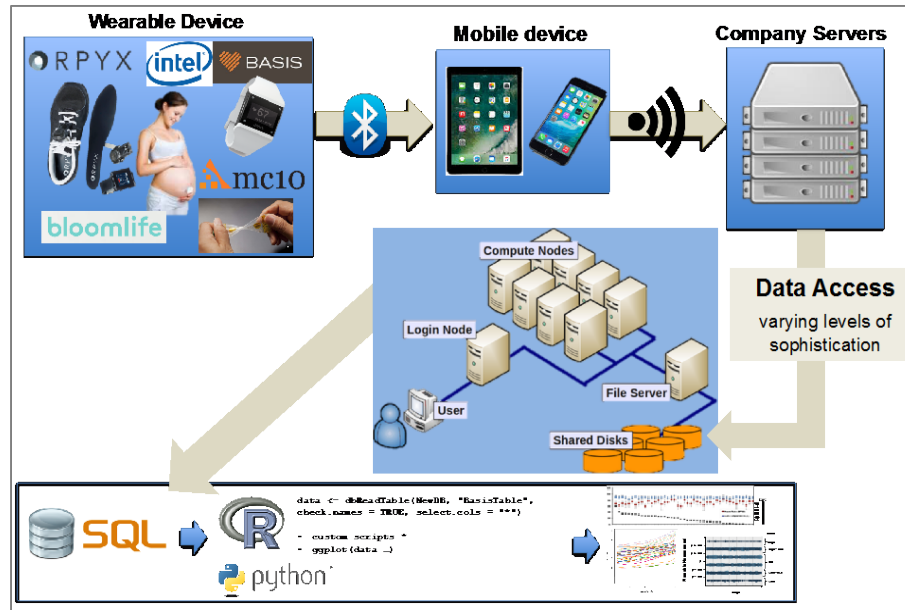
Electronic Health Records

- | | |
|---|-------------------|
| Lipid Panel (7) | Demographics |
| Comprehensive Metabolic Panel (17) | Vital signs |
| Complete Blood Count (19) | Lab orders |
| Urinalysis (15) | Medication orders |
| Electrolyte Panel (5) | |
| ----- | |
| Up to 1017 Unique Clinical Lab Features | |

Data Mining Procedures

Data acquisition, transfer, storage, preprocessing, analytics

Consumer Wearable Device Data Flow



Preprocessing Quality Control

	Preprocessing Task	Method Used	
Cleaning	Missing values	Remove whole observation	
	Range Consistency	DK	
	Denoising	Smooth by binning or capping/flooring	
Transformation	Normalization	None, Scaling (μ, σ), Log Scaling	
	Aggregation	DK	
	Reduction Feature Selection	DK, Lasso	

DK = Domain Knowledge