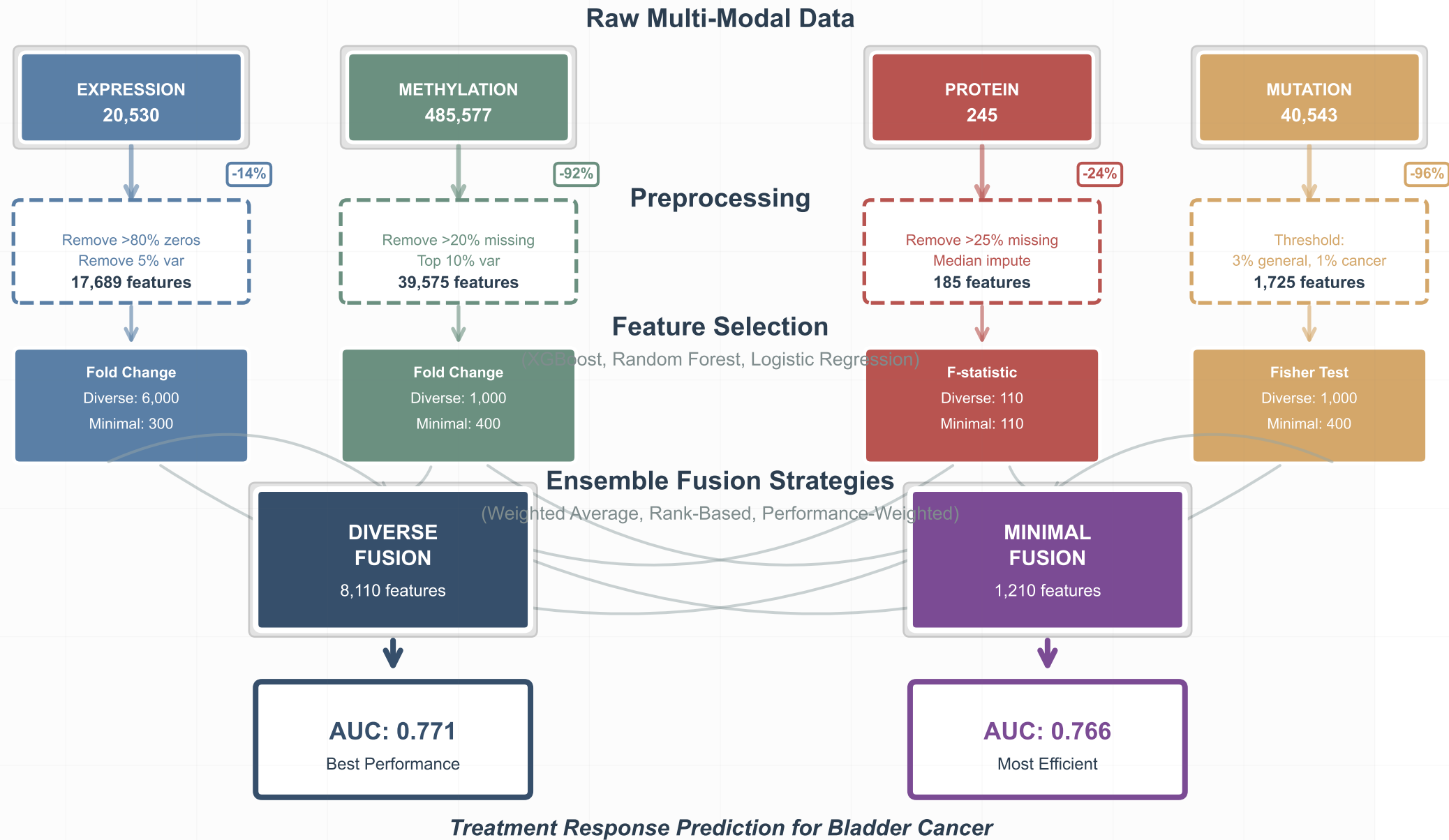Figure 2. Multi-modal feature reduction pipeline. Starting from 546,895 raw features across four modalities, our systematic preprocessing and feature selection approach reduces dimensionality to 1,210 (minimal) or 8,110 (diverse) features while preserving predictive signal. Both fusion strategies achieve superior performance.