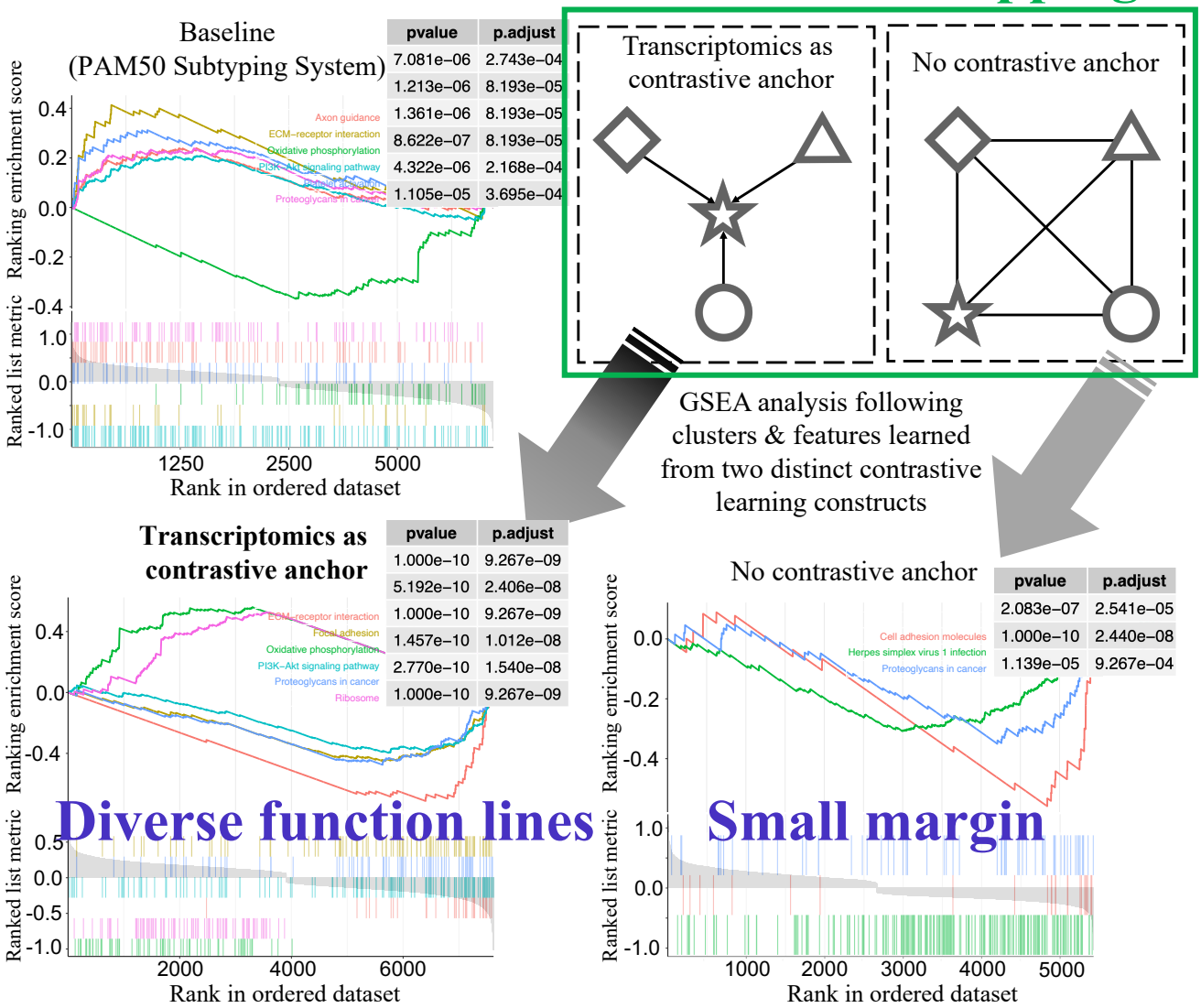With/without biological observation mapping