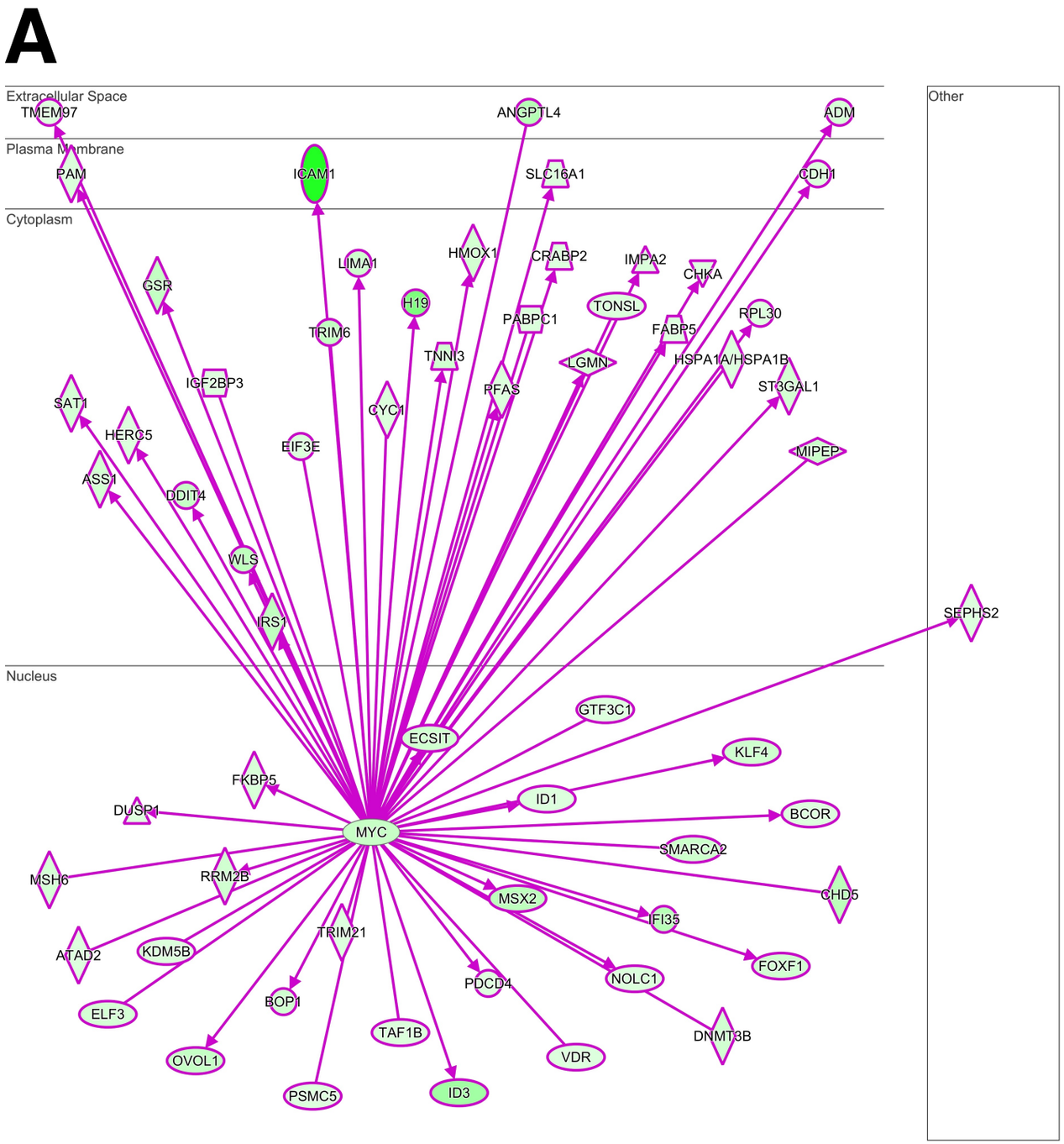Tak_additional file 9