Abstract: In 1983 Carsten Thomassen conjectured that for all positive integers $k$ and $g$ there exists $d$ such that all graphs with average degree at least $d$ contain a subgraph of average degree at least $k$ and girth at least $g$. In this talk we discuss what is known about this problem and its relationship with other problems. We also give a proof that the analogous problem for directed graphs has an affirmative answer.