1030-05-196 **Daniel W Cranston*** (dcransto@dimacs.rutgers.edu), DIMACS Center/CoRE Building/4th Floor, Rutgers University, 96 Frelinghuysen Road, Piscataway, NJ 08854-8018, and **Seog-Jin Kim**. *List-coloring the square of a subcubic graph.*

The *square* G^2 of a graph G is the graph with the same vertex set as G and with two vertices adjacent if their distance in G is at most 2.

Thomassen showed that every planar graph G with maximum degree $\Delta(G) = 3$ satisfies $\chi(G^2) \leq 7$. Kostochka and Woodall conjectured that for every graph, the list-chromatic number of G^2 equals the chromatic number of G^2, that is $\chi_l(G^2) = \chi(G^2)$ for all G. If true, this conjecture (together with Thomassen's result) implies that every planar graph G with $\Delta(G) = 3$ satisfies $\chi_l(G^2) \leq 7$. We prove that every connected graph (not necessarily planar) with $\Delta(G) = 3$ other than the Petersen graph satisfies $\chi_l(G^2) \leq 8$ (and this is best possible). In addition, we show that if G is a planar graph with $\Delta(G) = 3$ and girth $g(G) \geq 7$, then $\chi_l(G^2) \leq 7$.

Dvořák, Škrekovski, and Tancer showed that if G is a planar graph with $\Delta(G) = 3$ and girth $g(G) \geq 10$, then $\chi_l(G^2) \leq 6$. We improve the girth bound to show that if G is a planar graph with $\Delta(G) = 3$ and $g(G) \geq 9$, then $\chi_l(G^2) \leq 6$.

All of our proofs can be easily translated into linear-time coloring algorithms. (Received August 02, 2007)