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We report on some joint work with Rob Lazarsfeld. Let X be a smooth complex variety and L be an ample line bundle on X . We study the projective coordinate ring of $(X, L^{\otimes r})$ for $r \gg 0$. We obtain fairly precise results when X is a projective space and also when X is a smooth surface. We will discuss some open problems in this area. (Received January 24, 2010)