

By ~~Stefan~~ Stefan 2017, Science Editor

[Why Does Loneliness Induce Cancer, Dementia, Infection and Heart Disease?](#)

209 genes involved

People are said to be 'social monkeys' and loneliness inflicts severe effects on them. Far beyond what we've imagined, a new research shows that loneliness changes the expression of certain genes, so that chronically lonely people have less effective immune systems and are more exposed to infections. The results show that lonely people are at greater risk of developing heart diseases, infections, age-related dementia, and some cancers. Feeling lonely from time to time is only natural, but some people have this feeling consistently for years, and it is not related to how many friends they have or how numerous their family is. Such chronically lonely people were known to be less healthy, and cortisol - a stress hormone tuning the body's reaction to stress/threatening situations - was known to be found in higher concentrations in people feeling socially isolated. But how this happened was not known and it was not clear how inflammation was produced in most loneliness-connected diseases, when cortisol is known to boost the immune system? The team led by Steve Cole, a genomics researcher at the University of California, Los Angeles (UCLA), checked a pool of 153 people in their 50s and 60s, while searching for an answer. The subjects were assessed through the UCLA Loneliness Scale, measuring the person's subjective loneliness feeling (not the real social loneliness) by answers to statements like "I'm alone in the world" and "There's no one I can count on". After that, the team looked at the DNA from the white blood cells of 8 people assigned in the top 15 % of loneliness and 6 who scored in the bottom 15 %. 209 genes were found to have a shifted expression in the very lonely category, most of them being involved in the body's immune reaction. But while genes boosting the immune system and inflammation fight were overexpressed, those tuning the synthesis of antibodies and antiviral factors were working at lower levels. That's why lonely people experience chronic inflammation despite the high amounts of cortisol and are more exposed to microbes, viruses, and other tissue damaging factors. "The study is the first to reveal on a molecular level how loneliness puts people at risk for disease," said Cole. "This is an absolutely remarkable study," says Robert Wilson, a neuropsychologist at the Rush University Medical Center in Chicago, Illinois, whose team connected loneliness to dementia. "Still, it would be reassuring to see the study repeated with more subjects, and the work leaves unanswered which comes first, the loneliness or the change in gene expression. We're certainly a long way from that kind of specificity, but studies like this may get us there.", Wilson said. The team underlines the fact that the genetic markers would help doctors detect at-risk patients, keeping them healthier with anti-inflammatory chemicals like aspirin. "We can't change them into the happy, laughing life of the party, but we can keep them out of the coffin.", Cole further explained.