https://www.understandinganimalresearch.org.uk/news/the-science-of-sniffs-disease-smelling-dogs

https://www.medicalnewstoday.com/articles/323620#types-of-cancer

https://www.akc.org/expert-advice/lifestyle/diabetic-alert-dog/#:~:text=So%20just%20as%20a%20dog,fetching%20a%20blood%20glucose%20meter.

https://newatlas.com/health-wellbeing/diseases-that-dogs-are-good-at-detecting-volatile-organic-compounds/

Different Diseases:

A review of several studies on canine scent detection and cancer indicated that dogs might be able to identify the following cancers from human scents:

1) Lung cancer through a person's breath
2) Bladder cancer by sniffing a person's urine
3) Breast cancer by sniffing a person's breath
4) Prostate cancer by smelling a person's urine
5) Skin cancer by sniffing a person's skin
6) Ovarian cancer by smelling blood samples

Diabetes:

Interestingly, low and high sugar levels both release chemicals into the body that have distinct smells. Humans can't detect these odors, but dogs can. So just as a dog can be trained for bomb or drug detection, diabetic alert dogs are trained to sense this change in a diabetic person's breath or sweat. When the dog detects the target odor, he will alert with a specially trained behavior such as pawing, licking, vocalizing, or even fetching a blood glucose meter.

Covid 19:

When the COVID-19 pandemic struck, the diagnostic abilities of dogs were put to the test. Professional trainers claimed high success rates of dogs sniffing out COVID-19 infections, and a few small studies backed them up. In one, specially trained dogs were 97% accurate in sniffing out COVID-19 from sweat samples taken from 335 people. This included finding infection in 31 individuals with no symptoms. When testing moved from isolated biological materials in a lab to actual humans in real-world settings, accuracy dropped a bit.

When it comes to the widespread use of specially trained dogs to diagnose COVID-19, more study is needed. However, researchers and clinicians agree it's a promising avenue. Dogs detected infection up to 48 hours earlier than a PCR test. And while a rapid test requires a swab, chemical reagents and 10 minutes or so to produce results, the dog's response is immediate. There is also interest in harnessing the canine sense of smell to learn more about long COVID.

Narcolepsy:

Narcolepsy is a lifelong neurological disorder that affects the brain's ability to regulate sleep-wake cycles, leaving people prone to sudden attacks of sleep that, depending on when they hit, can be dangerous. In a 2013 study, trained dogs detected 11 out of 12 narcoleptics, leading researchers to conclude that narcolepsy patients produce a distinct dog-detectable odor.

Epilepsy:

Like narcoleptics, studies have found that people with epilepsy produce a specific odor, discernible by trained dogs, that warns of an impending seizure. Even in patients with different types of epilepsy, which produce different types of seizures, dogs were able to detect 'seizure odor' with a sensitivity between 67% and 100%.

Untrained dogs are also capable of detecting seizures. In a 2019 study, 19 untrained dogs of various breeds all displayed a significant increase in attention-seeking behaviors – such as making eye contact with a person – when they detected odors from sweat samples taken from epileptics, compared with samples from non-epileptics. It's also been suggested that dogs detect seizures by picking up on behavioral, rather than biological, cues. Regardless, the end result is the same.

Migraines:

There are many phases to a migraine, with the first being the premonitory phase, which can present with warning signs like mood changes, food cravings, nausea and brain fog. A lot of the evidence around migraine-detecting dogs is anecdotal, but 53.7% of 1,029 adult migraine sufferers self-reported that their (untrained) dog's behavior changed prior to or during the initial phase of migraine, with changes usually noticed within two hours before the onset of symptoms. Dog alerting behavior included staring, refusing to leave their owner's side, sitting or lying on their owner, or herding them to bed or the couch.

Parkinson’s disease:

A recent Chinese study evaluated the accuracy of sniffer dogs to distinguish between patients with Parkinson’s disease (PD) who were medicated, those with PD who weren’t medicated, and a control group. In people who were medicated, the dogs showed a sensitivity of 91%, for unmedicated PD patients, sensitivity was 89%.

Malaria:

Research has found that people infected by malaria produce an odor that makes them more attractive to mosquitoes. In a 2019 study, Gambian children with and without asymptomatic malaria were given socks to wear overnight. After sniffing the socks, two trained dogs were able to correctly identify 70% of children with malaria and 90% of healthy children, even detecting children with low parasite loads.

The mechanism of dog noses: