

## OPPORTUNITY #23

CAN COGNITIVE ENHANCEMENT BE DRUG-FREE?

# REBOOTING MEMORY

Neuroscience enabled cognitive enhancement to boost brain capacity over a lifetime

### WHY IT MATTERS TODAY

Cognition, or the process by which we acquire and use knowledge and skills, generally diminishes as we age. However, not all cognitive capabilities decrease. For example, the ability to shift attention and avoid distraction in order to focus actually improves with age.<sup>217</sup>

Nearly one-tenth of the world's population is aged 65 years and above.<sup>218</sup> By 2050, one in six people in the world will be over the age of 65.<sup>219</sup>

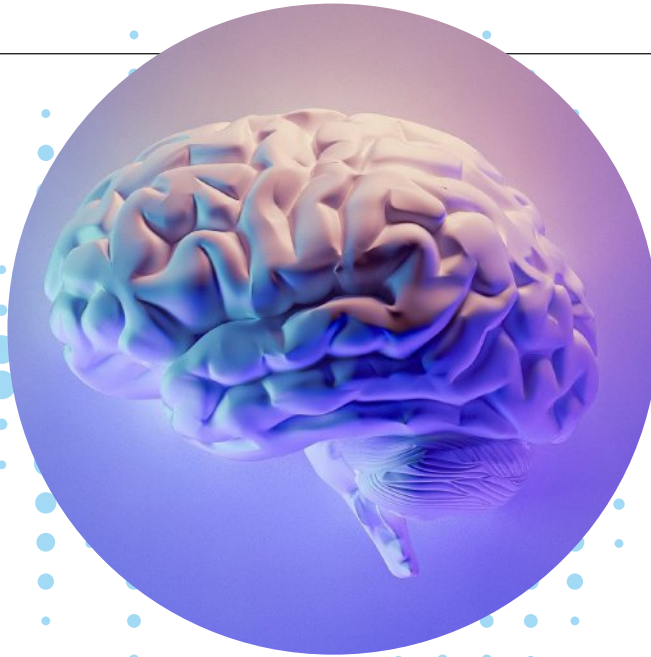
The population in the Middle East is expected to expand to 520 million by 2030 and reach 676 million by 2050. Similarly to the rest of the world, the size of the older population in the region is expected to grow to nearly 50 million by 2030, or around 10% of the total population.<sup>220</sup> By 2050, people aged 60 and above will exceed 100 million; they will make up 15% of the total population of the Middle East region.<sup>221</sup>

More people are seeking to work beyond retirement to increase their income and respond to government programmes that aim to reduce the burden on social services.<sup>222</sup>

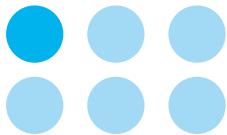
Studies show that older workers are more experienced, stay in jobs longer, take fewer days off, have a strong work ethic, train the next generation of workers,<sup>223</sup> are more engaged in the workplace and deliver better quality.<sup>224</sup>

Entrepreneurs aged between 50 and 80 years old make up a sizeable portion of all entrepreneurs, and older entrepreneurs are more likely to employ five or more people.<sup>225</sup>

### SECTORS



By 2050



**1 in 6**

people in the world will be over the age of 65.

#### THE OPPORTUNITY TOMORROW

Advances in neuroscience, particularly neuroergonomics and brain-computer interfaces,<sup>226</sup> as well as in nanomedicine, endocrinology, precision medicine and behavioural psychology, can facilitate cognitive enhancement and create the opportunities to learn nearly twice as fast as we usually do, irrespective of age. Personalised for each individual, difficult tasks such as research, writing, problem-solving and other complicated activities would become much easier as memory recall would be increased significantly.

Personalised treatments aimed at optimising cognition throughout one's lifespan can become part of healthcare to optimise brain development, boost intelligence, improve memory and maintain high-performing cognitive and creative functions.

#### BENEFITS

The benefits to individuals include better health and life outcomes.

#### RISKS

Risks include the abuse of cognitive enhancement to produce extreme levels in a few individuals but deny the advantages to a wider section of the population, increasing inequality. Long-term drug-based enhancement could also provoke unforeseeable side-effects in some individuals if the medication had irreversible downsides.