

## SOME KEY DATES

# THE HISTORY OF MAGNETIC RESONANCE IMAGING



## 1946

Scientists Felix Bloch and Edward Purcell independently discover nuclear magnetic resonance (NMR), the basis of magnetic resonance imaging (MRI). In 1952, they were awarded the Nobel Prize in Physics.<sup>1,2</sup>



## 1971

Raymond Damadian, a medical doctor and research scientist, develops a tool for medical diagnosis using NMR after showing that cancerous tissue emits response signals that last much longer than signals from non-cancerous tissue.<sup>1,3</sup>



## 1977

The first MRI whole body scan is performed on a human using an MRI machine developed by American doctors Raymond Damadian, Larry Minkoff, and Michael Goldsmith.<sup>4</sup>



## 1985

Emergence of 1.5 Tesla scanners, which have become the mainstay for commercial MRI systems.<sup>3</sup>



## 1990

Breakthrough in myocardial viability imaging with the application of an optimized inversion-recovery technique that improves the visibility of contrast-enhanced tissue.<sup>3</sup>



## 1998

Higher field strength scanners are developed that maximize the signal-to-noise ratio, leading to the commercial implementation of 3 T scanners.<sup>3</sup>



## 2006

Recognition of the association of the use of gadolinium-based contrast agents with the development of nephrogenic systemic fibrosis (NSF). The incidence of NSF decreases following the introduction of guidelines to screen for patients who are at higher risk of NSF.<sup>5</sup>



## 1981

Schering files the first patent application for a gadolinium-based MRI contrast agent.<sup>3,5</sup>

## 1988

The first gadolinium-based contrast agent is approved in Europe, the U.S., and Japan.<sup>1,5</sup>

## 1996

Daniel Sodickson describes the simultaneous acquisition of spatial harmonics technique, accelerating MRI data acquisition by a factor of 2 or more.<sup>3</sup>

## 2003

Paul Lauterbur and Peter Mansfield are awarded the Nobel Prize in Physiology or Medicine for their discoveries in MRI.<sup>1</sup>

## Since 2009

Deep learning-based artificial intelligence techniques are being actively investigated. Their potential applications range from data acquisition and image reconstruction to enhanced image analysis.<sup>6</sup>