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**Dinosaurs, Neutrons and a little Alchemy – revealing the secrets of a long-lost past.**

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Dinosaurs as popular science icons are great conversation starters. They also provide an ideal pathway for engaging members of the public, both young and old, in the quest for scientific discovery. Dinosaur species are being discovered at an unprecedented rate, and remarkable discoveries are being made about their evolution, behavior and molecular biology. In partnership with Australian and international universities and museums, we are utilizing combining neutron tomography, isotopic and spectroscopic methods to digitally excavate fossilized soft tissue, determine dinosaur blood temperature, reveal nesting behavior and growth patterns. Importantly, before these discoveries are published in peer-reviewed outlets, they are shared on a regular basis with primary and secondary school groups through interactive and hands-on activities at museums, art galleries and tours of our nuclear facilities. Children are fascinated by dinosaurs, and are often the family experts on the subject, demonstrating a more detailed knowledge than their parents. Students and their teachers perceive that modern scientific discovery is far removed from the classroom and that the results of the very latest research are beyond their access. By partnering with local schools, we are developing activities that incorporate dinosaur discovery as a contextual basis for introducing the scientific method and abstract physical concepts aligned with the standard curriculum. Students are encouraged to make their own observations based on available material, and to challenge a scientist through unbounded questioning. In this manner, pupils explore the concepts of material characterization, instrumental methods and the peer-review process. These children have directly impacted our research, with new research partnerships formed through their introductions, have led to the unexpected and unprecedented discovery of a new dinosaur species via neutron imaging, and a broader community awareness of the benefits of nuclear science to society. Giving children the opportunity to be amongst the first to learn of new discoveries energizes them in the classroom, exposes them to the excitement of research and motivates them to consider their own potential as future scientists.