

1st Annual Marshall Cleland Junior Investigator Award

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John Logar

Marshall R. Cleland: Foundation and Scientific Output

1st Annual Marshall Cleland Junior Investigator Award

Career & Background

- Background:** Born February 9, 1926, in Vermillion, South Dakota; served in the Army Air Corps during WWII.
- Metrology Roots:** Began career as a physicist at the National Bureau of Standards (NBS, now NIST) in Washington, DC.
- Technical Output:** Over 200 peer-reviewed papers and 18 US patents, including the foundational accelerator design patent.
- Recognition:** IMRP Laureate (1992), CIRMS Caswell Award (2009), Rad Journal Gunderson Award (2011).

Scientific Legacy

200+

Publications

18

US Patents

3

Major Awards

"Physics without rigorous measurement is just theory."

Cleland's foundational principle — the same one that guides CIRMS today.

NBS → NIST: Cleland's work predates and directly informed the measurement infrastructure CIRMS was built to support.

Commercialization: Radiation Dynamics, Inc. (RDI)

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From Lab to Global Industry

- Founded:** Co-founded RDI in Westbury, New York in 1958; served as Vice President then Chairman.
- The Hardware:** Developed and commercialized the Dynamitron™ — a high-power continuous electron beam accelerator.
- Global Scale:** Hundreds of Dynamitrons deployed worldwide for wire/cable, heat shrinkables, and tire manufacturing.
- Final Chapter:** Continued technical work with IBA Industrial after their acquisition of RDI in 1999.

RDI Timeline

- 1958** — Co-founds RDI in Westbury, NY
- 1960s** — Dynamitron™ commercialized; first industrial deployments
- 1970s–** — Hundreds of units deployed globally
- 1992** — IMRP Laureate — international recognition
- 1999** — RDI acquired by IBA Industrial
- 2009** — CIRMS Caswell Award

The Investigator Mandate: Closing the Gap

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Award Mandate

- The Problem:** The industrial scale of the Dynamitron rapidly outpaced dosimetric standards — a measurement gap that persists today.
- The Alignment:** Cleland chaired numerous accelerator conferences to keep academia, industry, and NIST aligned throughout his career.
- The Mandate:** Renaming this award operationalizes his commitment — funding junior investigators to close those measurement gaps.

What This Award Funds

Identify

The next measurement gap created by advances in radiation processing technology

Bridge

Perform the rigorous dosimetric and metrological work to close that gap

Align

Connect industry, academia, and NIST — continuing Cleland's lifelong mission

"We did not rename this award to honor a founder. We renamed it to remember his mandate."