



# A Definition of Molecular Imaging

Over the past 4 months, the members of the Molecular Imaging Center of Excellence (MICoE) Standard Definitions Task Force have been developing standard definitions and terms that will serve as the foundation of all communications, advocacy, and education activities for MICoE and SNM. The members of this task force are: David A. Mankoff, MD, PhD (chair); Bennett Chin, MD; William Eckelman, PhD; Jerry Glickson, PhD; Craig Levin, PhD; Chet Mathis, PhD; Barry Shulkin, MD; Albert Sinusas, MD; Michael Stabin, PhD; Mathew Thakur, PhD; Benjamin Tsui, PhD; and Ronald Van Heertum, MD. The group was staffed by Sue Abreu, MD, and Marybeth Howlett, director of MICoE.

The task force recommended, and the MICoE and SNM boards have approved, this definition of molecular imaging:

*Molecular imaging* is the visualization, characterization, and measurement of biological processes at the molecular and cellular levels in humans and other living systems. To

elaborate; Molecular imaging typically includes 2- or 3-dimensional imaging as well as quantification over time. The techniques used include radiotracer imaging/nuclear medicine, MR imaging, MR spectroscopy, optical imaging, ultrasound, and others.



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The group defined *molecular imaging agents* as “probes used to visualize, characterize, and measure biological processes in living systems. Both endogenous molecules and exogenous probes can be molecular imaging agents.” Additional standard descriptions developed by the task force include:

*Molecular imaging instrumentation* comprises tools that enable visualization and quantification in space and over time of signals from molecular imaging agents.

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# What Is “My MOC”?

Now that you are aware of all the requirements to maintain your ABNM certification, how do you sign up and where do you submit your credits? “My MOC” is a new component of the American Board of Nuclear Medicine (ABNM) Web site located within the “My Profile” section of the Maintenance of Certification Web site ([www.abnm.org](http://www.abnm.org)). Log in with your e-mail address and password to access the “My Profile” page. First, confirm and, if necessary, update your contact information, then move on to the “My MOC” section to begin the MOC (recertification) process. The current components of “My MOC” are:

- **MOC Fee:** The annual MOC administrative fee of \$150 can be made directly on the “My MOC” Web site.
- **Part I—Professional Standing:** Verify your medical practice credentials and current work experience.
- **Part II—Lifelong Learning:** Track your progress as you obtain continuing education (CE) credits

and self-assessment credits. Credit obtained from the SNM can be linked directly to the “My MOC” site.

- **Part III—Cognitive Expertise:** Access the MOC (recertification) exam policies, exam schedule, and an application.



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The ABNM hopes to have the Part IV (Practice Improvement) component of MOC available soon. The ABNM will be sending e-mail reminders to all of their diplomates to log in to the “My MOC” Web site to confirm contact information and initiate the MOC (recertification) process.

The ABNM expects all diplomates, including those with lifetime certificates, to participate in MOC. At this

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*Molecular imaging quantification* is the determination of regional concentrations of molecular imaging agents and biological parameters. Further, *molecular imaging quantification* provides measurements of processes at molecular and cellular levels. This quantification is a key element of molecular imaging data and image analysis, especially for inter- and intrasubject comparisons.

To assist with the understanding of molecular imaging in clinical care, statements were developed that can be used to help communicate the importance of molecular imaging:

- Molecular imaging has enormous relevance for patient care: it reveals the clinical biology of the disease process; it personalizes patient care by characterizing specific disease processes in different individuals; and it is useful in drug discovery and development, for example, for studying pharmacokinetics and pharmacodynamics.
- Molecular imaging offers unique insights that allow a more personalized approach to evaluation and management of cardiovascular disease conditions, such as: ischemic injury, heart failure, and left ventricular remodeling; thrombosis, atherosclerosis, and vulner-

able plaque; and angiogenesis, transplant rejection, and arrhythmic substrates.

- By accurately characterizing tumor properties or biological processes, molecular imaging plays a pivotal role in guiding cancer patient management: diagnosing, staging (extent and location), assessing therapeutic targets, monitoring therapy, and evaluating prognoses.
- Molecular imaging is a very important diagnostic tool in the early assessment, risk stratification, evaluation, and follow-up of patients with neurological diseases. Molecular imaging is playing an increasingly significant role in neurological conditions such as: tumors, dementias (Alzheimer's and others), movement disorders, seizure disorders, and psychiatric disorders.

Because these definitions will be used in other communications from the MICoE, formulating these definitions was an important first step for the task force and was done on a relatively brief time scale. The effort and insights of task force members and SNM staff leading to these definitions are greatly appreciated.

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time, the ABNM does not have plans to revoke a lifetime certificate for lack of participation in MOC; however, failure to participate will likely result in increased difficulty in renewing medical licenses, being credentialed, and being reimbursed by the government and third-party payers. MOC participation status will be reported to agencies that inquire about certification status.

The purchase and completion of a Lifelong Learning and Self-Assessment Program (LLSAP) module on the SNM Web site does not automatically enroll you in the ABNM

MOC process. To be fully enrolled, a diplomate must pay all unpaid annual administrative fees and complete all 3 parts of the program as these become due. Once enrolled, a diplomate may elect to have his or her self-assessment CE credit linked directly to the "My MOC" Web site. More information on the SNM LLSAP modules can be obtained at [www.snm.org/llsap](http://www.snm.org/llsap). Questions about "My MOC" can be directed to the ABNM at 314-367-2225 or [abnm@abnm.org](mailto:abnm@abnm.org).

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