

## The Match Algorithm

CaRMS uses a globally recognized and award-winning algorithm to match students into postgraduate medical training programs throughout Canada. The Match Algorithm is licensed from the Canadian-based National Matching Services Inc. (NMS) and has been used to conduct medical residency matches in North America for over 50 years. CaRMS first used a computerized Match Algorithm to conduct the R-1 Main Residency Match (R-1 match) in 1985.

Since that time, it has been used to conduct the R-1 match, as well as our three subspecialty matches: the Family Medicine/Emergency Medicine Match, Medicine Subspecialty Match and Pediatric Subspecialty Match. The Match Algorithm, known as the Roth-Peranson algorithm, was designed by Alvin Roth and NMS President Elliott Peranson and was key to Roth winning the Nobel Prize in Economics in 2012.

### How does the Match Algorithm work?

The Match Algorithm compares rank order lists (ROLs) submitted to CaRMS by applicants and programs and matches applicants to programs based on both parties' stated preferences. ROLs submitted by applicants indicate a list of programs where they wish to train ranked in their order of preference. ROLs submitted by programs indicate a list of applicants they wish to train ranked in

their order of preference. The final preferences of applicants and programs, as indicated in their rank order lists, determine the match outcome.

The algorithm is applicant-proposing, meaning it starts with an attempt to place an applicant into his or her most preferred program. In this way, the algorithm provides applicants with their best possible outcome based on the ROL submitted. At the end of the matching process, each applicant has either been matched to the most preferred choice possible from their ROL or all choices submitted by the applicant have been exhausted and they have not been matched.

### The Match Algorithm at work: A sample scenario

Matches for postgraduate medical training programs in Canada are complex, involving hundreds of programs and thousands of applicants. The sample scenario below breaks down how the Match Algorithm would work on a smaller scale if there were four applicants, each with diverse career interests, and only four residency programs in the country, each only having one position available.

If you have any questions about the match or the Match Algorithm, please contact the help desk at [help@carms.ca](mailto:help@carms.ca) or 1.877.227.6742.

