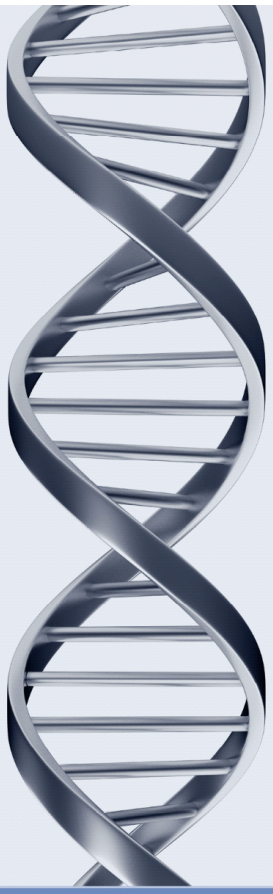

# National Survey of Precision Medicine in Cancer Treatment

**A survey of the**
NATIONAL CANCER INSTITUTE
NATIONAL INSTITUTES OF HEALTH
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

**In collaboration with the**
NATIONAL HUMAN GENOME RESEARCH INSTITUTE, NIH
and the AMERICAN CANCER SOCIETY

## Please Note:

**This survey is about genomic testing for cancer treatment, also known as precision or personalized medicine. It is intended for oncologists who have treated or evaluated patients with cancer, including hematologic malignancies and solid tumors. If you have NOT treated or evaluated any patients with any type of cancer in the past 12 months, please check the box below and return the blank survey in the envelope provided.**

☐ **I have not treated or evaluated cancer patients in the past 12 months.**

# Introduction

This survey is about **genomic testing for cancer treatment**, also known as precision or personalized medicine. You are one of 3,000 oncologists in the United States randomly sampled to take part in this important research. The survey should take about **20 minutes** to complete.

The survey is sponsored by **the National Cancer Institute, the National Human Genome Research Institute, and the American Cancer Society** to help better understand current and potential use of genomic tests, including single gene tests and multi-marker tumor panels. The findings from the survey will also be used to identify future research needs and to help inform the development of educational materials for providers and patients.

NCI is being assisted by RTI International in fielding this survey. The survey is voluntary, but it is important to the success of the study that everyone chosen takes part.

The information you provide will be kept private, and your name or any other information that could identify you will not be associated directly with the results.

If you would like further information about the survey please contact RTI International at 1-866-590-7469 or e-mail: PrecisionMedicine@rti.org.

If you would like further information about how RTI International ensures that this NCI survey is carried out ethically and protects respondent privacy, please contact RTI International's Office of Human Research Protection at http://www.rti.org/page.cfm/Human_Research_Protection.

We thank you in advance for your time and your valuable contribution to this research.

**OMB No. 0925-xxxx**
**Expiration XX/XX/20XX**

Collection of this information is authorized by The Public Health Service Act, Section 411 (42 USC 285a). Rights of study participants are protected by The Privacy Act of 1974. Participation is voluntary, and there are no penalties for not participating or withdrawing from the study at any time. Refusal to participate will not affect your benefits in any way. The information collected in this study will be kept private to the extent provided by law. Names and other identifiers will not appear in any report of the study. Information provided will be combined for all study participants and reported as summaries. You are being contacted by mail to complete this instrument so that we can understand how genomic testing results are used to inform cancer treatment.

Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-XXXX). Do not return the completed form to this address.

## Survey instructions

- For each question, please fill in one box ☒ or write in an answer as requested.
- If your answer is not adequately represented by available choices, please write in after

"Other (Please specify): _____."

# SECTION A: YOUR PATIENT POPULATION

This questionnaire focuses on treatment and evaluation of patients with cancer, including hematologic malignancies and solid tumors.

**A1.** On average, how many unique patients do you see for evaluation or treatment each month? Of those, how many are cancer patients? Your best estimate is fine.

☐☐☐ Total unique patients per month

☐☐☐ Unique cancer patients per month

**A2.** On average, how many unique patients with the following cancers do you see for evaluation or treatment each month?

| *(Please check one box in each row.)* | None | 1-10 patients per month | 11-25 patients per month | 26-50 patients per month | 51+ patients per month |
|---|---|---|---|---|---|
| a. Breast cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Colorectal cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Glioma | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Gynecological cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Hematological cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. Kidney cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| g. Lung cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| h. Melanoma | ☐ | ☐ | ☐ | ☐ | ☐ |
| i. Stomach (Gastric) cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| j. Other Solid Tumor | ☐ | ☐ | ☐ | ☐ | ☐ |

**A3.** By newly diagnosed, we mean patients who were diagnosed with cancer for the first time and have not yet started treatment. On average, how many **newly diagnosed** cancer patients do you see for evaluation or treatment **each month**? Your best estimate is fine.

☐☐☐ Newly diagnosed cancer patients

**A4.** By metastatic, we mean cancer that has spread to other parts of the body. By recurrent, we mean cancer that has come back after a period of time during which the cancer could not be detected. On average, how many patients with **metastatic or recurrent cancers** do you see for evaluation or treatment **each month**? Your best estimate is fine.

☐☐☐ Metastatic or recurrent cancer patients

☐☐☐☐☐☐☐☐

# SECTION B: MULTI-MARKER TUMOR PANEL TESTING

Section B focuses on your use of and experience with **multi-marker tumor panels** such as FoundationOne or Target Now. For this survey, a multi-marker tumor panel is defined as a test that allows multiple genes to be assessed for mutations, alterations, or expression that may provide clinically actionable information.

We will ask about single gene tests (tests for individual genes or chromosomal mutations) in Section C.

**B1.** How of many of your cancer patients received the following multi-marker tumor panels within the **past 12 months**? Please include tests that were ordered by other physicians and tests performed by pathology.

| *(Please check one box in each row.)* | Not familiar with this test | Familiar with this test, but not used in the past 12 months | 1-10 patients in the past 12 months | 11-25 patients in the past 12 months | 26+ patients in the past 12 months |
|---|---|---|---|---|---|
| a. BioSpeciFix (Precision Therapeutics) | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. DecisionDX (CastleDx) | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. FoundationOne (Foundation Medicine) | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. FoundationOne Heme (Foundation Medicine) | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Mammaprint (Agendia) | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. OncoPlex (Diagnostics) | ☐ | ☐ | ☐ | ☐ | ☐ |
| g. Oncotype DX Breast (Genomic Health) | ☐ | ☐ | ☐ | ☐ | ☐ |
| h. Oncotype DX Colon (Genomic Health) | ☐ | ☐ | ☐ | ☐ | ☐ |
| i. Prosigna (NanoString Technologies) | ☐ | ☐ | ☐ | ☐ | ☐ |
| j. Response DX (Response Genetics) | ☐ | ☐ | ☐ | ☐ | ☐ |
| k. Solid Tumor Mutation Panel (ARUP) | ☐ | ☐ | ☐ | ☐ | ☐ |
| l. Suraseq 7500 (AsuraGen) | ☐ | ☐ | ☐ | ☐ | ☐ |
| m. Target Now (Caris Molecular Intelligence) | ☐ | ☐ | ☐ | ☐ | ☐ |
| n. Other (Please specify): _____ | ☐ | ☐ | ☐ | ☐ | ☐ |
| o. Other (Please specify): _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

The next section asks additional questions about multi-marker tumor panels. For these questions please **exclude** Oncotype DX for breast.

**B2.** In the **past 12 months**, for what percentage of your patients receiving multi-marker tumor panels, **excluding** Oncotype DX for breast, did you use the results to guide patient care decisions? Your best estimate is fine.

☐☐☐ % [If 0, go to **Question B12**]

**B3.** In the **past 12 months**, how often did you use the results from multi-marker tumor panels, **excluding** Oncotype DX for breast, to guide care decisions when treating the following types of patients?

| *(Please check one box in each row.)* | Did not see these patients | Never | Rarely | Sometimes | Often | Always or almost always |
|---|---|---|---|---|---|---|
| a. Patients with an initial diagnosis of cancer | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Patients with advanced refractory disease | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Patients with rare cancers | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Patients with cancers of unknown origins | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Patients for whom there is an FDA-approved therapy associated with a companion diagnostic | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. Patients on specific clinical trials that have a companion molecular test | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**B4.** In the **past 12 months**, have you used the results from multi-marker tumor panels, **excluding** Oncotype DX for breast, for the following purposes?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| a. To guide the use of FDA-approved drugs | ☐ | ☐ |
| b. To help decide whether to use FDA-approved drugs for an off-label use | ☐ | ☐ |
| c. To provide diagnostic information | ☐ | ☐ |
| d. To provide prognostic information | ☐ | ☐ |
| e. To determine patient eligibility for clinical trials | ☐ | ☐ |
| f. Other (Please specify): | ☐ | ☐ |

**B5.** In the **past 12 months**, when you used the results of multi-marker tumor panels for your patients, **excluding** Oncotype DX for breast, how often did you experience the following?

| *(Please check one box in each row.)* | Never | Rarely | Sometimes | Often | Always or almost always |
|---|---|---|---|---|---|
| a. The test results assisted in making a diagnosis | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. The test results helped to inform my treatment recommendations | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. The test results provided important information on prognosis | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. The test results were helpful to patients or their families in understanding their disease and making decisions | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. The test results were conclusive, but not actionable | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. The test results were inconclusive/indeterminate | ☐ | ☐ | ☐ | ☐ | ☐ |
| g. The test results were difficult to interpret | ☐ | ☐ | ☐ | ☐ | ☐ |
| h. The recommended drugs based on test results were not covered by insurance | ☐ | ☐ | ☐ | ☐ | ☐ |
| i. The test results confirmed eligibility for a clinical trial | ☐ | ☐ | ☐ | ☐ | ☐ |

**B6.** In the **past 12 months**, when you ordered or requested multi-marker tumor panels for your patients, **excluding** Oncotype DX for breast, how often did you experience the following?

| *(Please check one box in each row.)* | Never | Rarely | Sometimes | Often | Always or almost always | Don't Know |
|---|---|---|---|---|---|---|
| a. At least some costs were covered by insurance | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Inadequate reimbursement was paid to physician or hospital | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Uncertainty as to whether the test was indicated for patient's clinical situation | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Long wait to receive tests results that caused a delay in making patient care decisions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Patient reluctance because of concern that hereditary genetic abnormalities might be found | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**B7.** In the **past 12 months**, how important was each of the following factors in your decision to use multi-marker tumor panels to make **treatment decisions** for your cancer patients?

| *(Please check one box in each row.)* | Not at all important | A little important | Somewhat important | Very important |
|---|---|---|---|---|
| a. Availability of guidelines (e.g., ASCO, NCCN) for the test | ☐ | ☐ | ☐ | ☐ |
| b. Your familiarity with guidelines (e.g., ASCO, NCCN) for the test | ☐ | ☐ | ☐ | ☐ |
| c. Your formal education or training (e.g., residency/fellowship, CME, lecture or symposia) on the test | ☐ | ☐ | ☐ | ☐ |
| d. Past experience with the test | ☐ | ☐ | ☐ | ☐ |
| e. FDA approval of the test for the patient population being tested | ☐ | ☐ | ☐ | ☐ |
| f. Information about the test from test suppliers or company representatives | ☐ | ☐ | ☐ | ☐ |

**B8.** In the **past 12 months**, how important was each of the following factors in your decision to use multi-marker tumor panels to make treatment decisions for your cancer patients?

| *(Please check one box in each row.)* | Not applicable | Not at all important | A little important | Somewhat important | Very important |
|---|---|---|---|---|---|
| a. Performance characteristic of the test (e.g., positive predictive value, sensitivity, specificity) | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Prevalence of genetic alterations among patients with a specific type of cancer | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Ability of the test to predict clinical benefit of specific treatments | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Ability of the test to predict toxicity of specific treatments | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Ability of the test to provide prognostic information | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. Ability of the test to provide diagnostic information (e.g., for a cancer of unknown primary) | ☐ | ☐ | ☐ | ☐ | ☐ |

**B9.** In the **past 12 months**, how important was each of the following factors in your decision to use multi-marker tumor panels to make treatment decisions for your cancer patients?

| *(Please check one box in each row.)* | Not at all important | A little important | Somewhat important | Very important |
|---|---|---|---|---|
| a. Patient or family preferences | ☐ | ☐ | ☐ | ☐ |
| b. Test covered by patient's insurance | ☐ | ☐ | ☐ | ☐ |
| c. Treatment is covered by patient's insurance | ☐ | ☐ | ☐ | ☐ |
| d. Patient out-of-pocket expenses for testing | ☐ | ☐ | ☐ | ☐ |
| e. Patient out-of-pocket expenses for treatment | ☐ | ☐ | ☐ | ☐ |

**B10.** In the **past 12 months**, how often, if at all, did you use the following practice guidelines or recommendations for multi-marker tumor panels when making treatment decisions for cancer patients?

| *(Please check one box in each row.)* | I am not familiar with these guidelines | Never | Rarely | Sometimes | Often | Always or almost always |
|---|---|---|---|---|---|---|
| a. American Society of Clinical Oncology (ASCO) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Blue Cross Blue Shield (BCBS) or the BCBS Technical Evaluation Center | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Evaluation of Genomic Applications in Practice and Prevention (EGAPP) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. National Comprehensive Cancer Network (NCCN) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Other (Please specify on the line below): | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**B11.** In the **past 12 months**, what percentage of your cancer patients initiated a discussion with you about multi-marker tumor panels? Please include when a family member or other caregiver asked on the patient's behalf. Your best estimate is fine.

☐☐☐ %

**B12.** The next question is about the times during the **past 12 months** when you decided NOT to order a multi-marker tumor panel for a cancer patient. When this occurred, how often was it for the following reasons?

| *(Please check one box in each row.)* | Never | Rarely | Sometimes | Often | Always or almost always |
|---|---|---|---|---|---|
| a. Multi-marker testing was not relevant for the patient | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Used tests for individual genes, rather than multi-marker tumor panels | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Not enough evidence of utility | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Multi-marker panels were not available in my practice | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Test was not covered by patient's insurance | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. Out-of-pocket costs for tests were too expensive for the patient | ☐ | ☐ | ☐ | ☐ | ☐ |
| g. Provider reimbursement for tests was insufficient | ☐ | ☐ | ☐ | ☐ | ☐ |
| h. Lack of personnel or resources to interpret test results | ☐ | ☐ | ☐ | ☐ | ☐ |
| i. Uncertainty regarding informed consent procedures | ☐ | ☐ | ☐ | ☐ | ☐ |
| j. Difficulty obtaining sufficient tissue for testing | ☐ | ☐ | ☐ | ☐ | ☐ |
| k. Insufficient time to order tests or review results | ☐ | ☐ | ☐ | ☐ | ☐ |
| l. Patient's or patient's family preferences | ☐ | ☐ | ☐ | ☐ | ☐ |

**B13.** In the **past 12 months,** how often, if at all, were the following barriers to involving your cancer patients or their families in the decision-making process for multi-marker tumor panels?

| *(Please check one box in each row.)* | Never | Rarely | Sometimes | Often | Always or almost always |
|---|---|---|---|---|---|
| a. Difficulty getting patient/family to understand the purpose of the test | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. Difficulty getting patient/family to understand treatment options | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Lack of educational materials to share with patient/family | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Insufficient time to discuss testing or treatment options with patient/family | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Patient/family resistant to testing | ☐ | ☐ | ☐ | ☐ | ☐ |
| f. Lack of patient/family interest in testing | ☐ | ☐ | ☐ | ☐ | ☐ |

**B14.** In the **past 12 months**, did you rely on any of the following to learn about using a new multi-marker tumor panel for cancer patients?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| a. Informal networks (e.g., colleagues) | ☐ | ☐ |
| b. National or international experts | ☐ | ☐ |
| c. Testing laboratories or pathologists | ☐ | ☐ |
| d. Test manufacturers or drug company representatives or websites | ☐ | ☐ |
| e. FDA package inserts | ☐ | ☐ |
| f. Scientific meetings or conferences | ☐ | ☐ |
| g. Peer-reviewed medical literature | ☐ | ☐ |
| h. Medical professional societies such as ASCO or NCCN | ☐ | ☐ |
| i. Government (e.g., NIH) websites or materials | ☐ | ☐ |
| j. Foundation or cancer patient advocacy websites or materials | ☐ | ☐ |
| k. Evidence-based, synthesized websites (e.g., UpToDate) | ☐ | ☐ |
| l. Other (Please specify): | ☐ | ☐ |

**B15.** In the **past 12 months**, did you refer any of your cancer patients to another location or provider for a multi-marker tumor panel?

☐ Yes

☐ No → Go to **Question B17**

**B16.** In the **past 12 months**, did you refer any of your cancer patients to any of the following for a multi-marker tumor panel?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| a. Comprehensive Cancer Center | ☐ | ☐ |
| b. Academic medical center | ☐ | ☐ |
| c. Oncologist outside your practice | ☐ | ☐ |
| d. Clinical trial | ☐ | ☐ |
| e. Other (Please specify): | ☐ | ☐ |

**B17.** In the **past 12 months**, what percentage of your cancer patients presented with results from a commercially available multi-marker tumor test that was not ordered through you or your practice?

☐ None → Go to **Section C, page 8**

☐ <10%

☐ 11%-25%

☐ 26%-50%

☐ 51%-80%

☐ >80%

**B18.** In the **past 12 months**, when patients presented with commercially available multi-marker tumor testing results that you did not order, did you take any of the following courses of action?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| a. Consulted with your local Tumor Board | ☐ | ☐ |
| b. Consulted with a pathologist | ☐ | ☐ |
| c. Considered patient preferences for treatment | ☐ | ☐ |
| d. Ordered additional single gene tests | ☐ | ☐ |
| e. Ordered additional multi-marker tumor tests | ☐ | ☐ |
| f. Spoke with the manufacturer of the test | ☐ | ☐ |
| g. Consulted literature regarding the test | ☐ | ☐ |
| h. Referred to a cancer center | ☐ | ☐ |
| i. Referred to a colleague | ☐ | ☐ |
| j. Used results to guide patient care decisions | ☐ | ☐ |
| k. Enrolled patient in a clinical trial | ☐ | ☐ |

# SECTION C: GENOMIC TESTING

The previous questions asked about multi-maker tumor panels. This section asks about **both multi-marker tumor panel testing** and **single gene tests** (tests for individual genes or chromosomal mutations).

**C1.** In the **past 12 months**, have you used results from genomic tests (either multi-marker tumor panels or single gene tests) for any of the following individual genes or chromosomal mutations to make treatment decisions for your cancer patients?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| **Stomach Cancer** | | |
| a. *KIT* mutation | ☐ | ☐ |
| b. *HER2/neu* amplification | ☐ | ☐ |
| **Colon Cancer** | | |
| c. *BRAF* mutation | ☐ | ☐ |
| d. *KRAS* mutation | ☐ | ☐ |
| e. Microsatellite instability (MSI) | ☐ | ☐ |
| **Hematologic Malignancy** | | |
| f. *BCL2-IGH* translocation | ☐ | ☐ |
| g. *BCR-ABL* translocation | ☐ | ☐ |
| h. *KIT* mutation | ☐ | ☐ |
| i. *FLT3* mutation | ☐ | ☐ |
| j. *IGH* rearrangement | ☐ | ☐ |
| k. *JAK2* mutation | ☐ | ☐ |
| l. *MPL* mutation | ☐ | ☐ |
| m. *PML-RARA* translocation | ☐ | ☐ |
| n. *TRG* rearrangement | ☐ | ☐ |

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| **Glioma** | | |
| o. *1p/19q* deletion | ☐ | ☐ |
| p. *IDH* mutation | ☐ | ☐ |
| q. *MGMT* mutation | ☐ | ☐ |
| **Melanoma** | | |
| r. *BRAF* mutation | ☐ | ☐ |
| **Lung Cancer** | | |
| s. *EGFR* amplification/mutation | ☐ | ☐ |
| t. *ERCC1* mutation | ☐ | ☐ |
| u. *EML4-ALK* translocation | ☐ | ☐ |
| v. *KRAS* mutation | ☐ | ☐ |
| w. *ROS1* mutation | ☐ | ☐ |
| **Breast Cancer** | | |
| x. *HER2/neu* amplification | ☐ | ☐ |
| **Other Genes or Mutations** | | |

Please specify gene/mutation (and cancer type):

**C2.** In the **past 12 months,** when you or your staff discussed any form of genomic testing with your cancer patients or their families, how often did you discuss the likely costs of the testing and related treatment?

- ☐ Never
- ☐ Rarely
- ☐ Sometimes
- ☐ Often
- ☐ Always or almost always
- ☐ Not discussed in past 12 months

**C3.** For each of the following tests, how confident are you in your ability to determine whether the test i**s clinically appropriate** for a patient?

| *(Please check one box in each row.)* | Not at all confident | A little confident | Moderately confident | Very confident | Extremely confident |
|---|---|---|---|---|---|
| a. Commercially available multi-marker tumor panels (e.g., FoundationOne, Oncotype DX) | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. In-house multi-marker tumor panels | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Whole genome sequencing | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Tests for individual genes or chromosomal mutations (e.g., KRAS for colorectal cancer) | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Whole exome sequencing | ☐ | ☐ | ☐ | ☐ | ☐ |

**C4.** For each of the following tests, how confident are you in your ability to explain **the testing purpose and procedures** to a patient?

| *(Please check one box in each row.)* | Not at all confident | A little confident | Moderately confident | Very confident | Extremely confident |
|---|---|---|---|---|---|
| a. Commercially available multi-marker tumor panels (e.g., FoundationOne, Oncotype DX) | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. In-house multi-marker tumor panels | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Whole genome sequencing | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Tests for individual genes or chromosomal mutations (e.g., KRAS for colorectal cancer) | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Whole exome sequencing | ☐ | ☐ | ☐ | ☐ | ☐ |

**C5.** For each of the following tests, how confident are you in your ability to use the results of the test to **guide decisions** about patient treatment and management?

| *(Please check one box in each row.)* | Not at all confident | A little confident | Moderately confident | Very confident | Extremely confident |
|---|---|---|---|---|---|
| a. Commercially available multi-marker tumor panels (e.g., FoundationOne, Oncotype DX) | ☐ | ☐ | ☐ | ☐ | ☐ |
| b. In-house multi-marker tumor panels | ☐ | ☐ | ☐ | ☐ | ☐ |
| c. Whole genome sequencing | ☐ | ☐ | ☐ | ☐ | ☐ |
| d. Tests for individual genes or chromosomal mutations (e.g., KRAS for colorectal cancer) | ☐ | ☐ | ☐ | ☐ | ☐ |
| e. Whole exome sequencing | ☐ | ☐ | ☐ | ☐ | ☐ |

# SECTION D: BREAST CANCER

The next few questions are about breast cancer patients.

**D1.** In the **past 12 months**, have you seen any **breast cancer** patients for evaluation or treatment?

- ☐ Yes
- ☐ No → Go to **Section E**

**D2.** A female patient presents with ER+, HER2- breast cancer with a high recurrence score (≥ 26) from the OncotypeDX Breast Cancer Assay. Which of the following factors would be important to you in deciding whether to recommend chemotherapy for this patient?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| a. Age ≥ 75 | ☐ | ☐ |
| b. Presence of cardiomyopathy | ☐ | ☐ |
| c. Black or African American race | ☐ | ☐ |
| d. Patient's inability to pay out-of-pocket expenses | ☐ | ☐ |
| e. Patient's preferences not to receive therapy | ☐ | ☐ |
| f. Other (Please specify): | ☐ | ☐ |

**D3.** A female patient presents with ER+, HER2- breast cancer with a low recurrence score (<18) on the OncotypeDX Breast Cancer Assay. Which of the following factors would be important to you in deciding whether to recommend chemotherapy for the patient?

| *(Please check one box in each row.)* | Yes | No |
|---|---|---|
| a. Age ≤ 45 | ☐ | ☐ |
| b. No comorbidities, otherwise healthy patient | ☐ | ☐ |
| c. Black or African American race | ☐ | ☐ |
| d. Patient ability to pay out-of-pocket cost | ☐ | ☐ |
| e. Patient's amenability to chemotherapy | ☐ | ☐ |
| f. Other (Please specify): | ☐ | ☐ |

# SECTION E: LUNG CANCER

The next few questions are about lung cancer patients.

**E1.** In the **past 12 months**, have you seen any **lung cancer** patients for evaluation or treatment?

- ☐ Yes
- ☐ No → Go to **Section F, page 11**

**E2.** A 57-year-old man presents with increased dyspnea on exertion and is diagnosed with Stage IV non-small cell lung cancer with adenocarcinoma histology. His relevant medical history includes 35 pack-years of smoking; he quit 5 years ago. He has an excellent performance status (ECOG PS 1). For which of the following mutations would you consider requesting or ordering a genomic test, and when would you order the test?

| *(Please check one box in each row.)* Test | All such patients are tested at time of diagnosis (reflex testing) ▼ | I would test THIS patient at time of diagnosis ▼ | I would wait until the time of progression to consider ▼ | I would not order the test for THIS patient ▼ |
|---|---|---|---|---|
| a. *EGFR* Mutation | ☐ | ☐ | ☐ | ☐ |
| b. *ALK* rearrangement | ☐ | ☐ | ☐ | ☐ |
| c. *ROS1* rearrangement | ☐ | ☐ | ☐ | ☐ |
| d. *KRAS* Mutation | ☐ | ☐ | ☐ | ☐ |
| e. *RRM1* Expression | ☐ | ☐ | ☐ | ☐ |
| f. *ERCC1* Expression | ☐ | ☐ | ☐ | ☐ |
| g. *BRAF* Mutation | ☐ | ☐ | ☐ | ☐ |
| h. Next generation sequencing | ☐ | ☐ | ☐ | ☐ |

# SECTION F: COLORECTAL CANCER

The next few questions are about colon cancer patients.

**F1.** In the **past 12 months**, have you used multi-marker tumor testing to guide care decisions for **colorectal cancer** patients?

☐ Yes
☐ No → Go to **Section G, page 12**

**F2.** For each of the following clinical scenarios, at what point in time, if at all, would you request a multi-marker tumor test for your colorectal cancer patients? (Mark one box for each clinical scenario.)

| *(Please check one box in each row.)* Test | All such patients are tested at time of diagnosis (reflex testing) ▼ | I would test THIS patient at time of diagnosis ▼ | I would wait until the time of progression to consider ▼ | I would not order the test for THIS patient? ▼ |
|---|---|---|---|---|
| a. A newly diagnosed 74-year-old man with Stage IV KRAS mutant colon cancer | ☐ | ☐ | ☐ | ☐ |
| b. A 35-year-old woman with metastatic colon cancer recently progressed on first line therapy and found to have a BRAF mutation | ☐ | ☐ | ☐ | ☐ |
| c. A 65-year-old woman with Stage II disease with high risk features of perforation | ☐ | ☐ | ☐ | ☐ |
| d. A 45-year-old woman with Lynch Syndrome presenting with Stage III disease receiving adjuvant therapy with FOLFOX | ☐ | ☐ | ☐ | ☐ |

# SECTION G: ABOUT YOU AND YOUR PRACTICE

The next set of questions will help us to better understand you and your primary medical practice. By primary medical practice we mean the site where you see most of your cancer patients.

**G1.** Is your primary practice a ...

- ☐ Solo practice
- ☐ Single specialty group
- ☐ Multi-specialty group
- ☐ Other (Please specify):

**G2.** Including yourself, how many full- and part-time physicians are in your primary practice?

☐☐☐ Number

**G3.** How would you characterize your primary practice?

- ☐ Urban
- ☐ Suburban
- ☐ Rural

**G4.** Does your primary practice provide care for patients living in rural areas as part of an outreach or visiting clinician arrangement?

- ☐ Yes
- ☐ No

**G5.** Does your primary practice have the following genomic testing services?

| *(Please check one box in each row.)* | Yes | No | Don't know |
|---|---|---|---|
| a. On-site pathology | ☐ | ☐ | ☐ |
| b. Contracts with outside testing laboratories to perform tests not available on-site | ☐ | ☐ | ☐ |
| c. On-site genetic counselors | ☐ | ☐ | ☐ |
| d. Internal policies or protocols or use of genomic and biomarker testing | ☐ | ☐ | ☐ |
| e. An EMR that alerts providers when a genomic test is recommended for a particular patient or before ordering a particular drug | ☐ | ☐ | ☐ |

**G6.** In 2014, what percentage of your patients were Medicare, Medicaid, and self-pay/uninsured?

☐☐☐ % Medicare

☐☐☐ % Medicaid

☐☐☐ % Self-pay/uninsured

**G7.** In which of the following practice settings do you see patients for treatment or evaluation?

*(Please check all that apply)*

- ☐ Academic medical center or medical school
- ☐ Medical center not affiliated with a medical school
- ☐ Community hospital
- ☐ Office-based
- ☐ Integrated healthcare delivery system
- ☐ Other (Please specify):

**G8.** Is your primary practice affiliated with an academic institution such as a medical school or teaching hospital? Do not include where your practice only has admissions privileges.

- ☐ Yes
- ☐ No

Lastly, we have just a few more questions about you and your background.

**G9.** What is your primary specialty? Please think about the one specialty in which you spend most of your time.

- ☐ Medical oncology
- ☐ Hematology
- ☐ Hematology/oncology
- ☐ Pediatric hematology/oncology
- ☐ Other (Please specify):

**G10.** For how many years have you been practicing in your primary specialty? Please specify in whole years, rounding up to the nearest year.

☐☐ years

**G11.** Do you hold a faculty appointment or do you have a teaching assignment at a medical school or hospital?

☐ Yes
☐ No

**G12.** During a typical month, approximately what percentage of your professional time do you spend in the following activities?

☐☐☐ % Providing patient care

☐☐☐ % Research

☐☐☐ % Teaching

☐☐☐ % Administration

**G13.** Have you received any formal training (e.g., instruction during residency/fellowship, professional lectures or seminars, symposiums, conferences, CMEs) in use of **genomic testing**?

☐ Yes
☐ No

**G14.** Which of these best describes your ethnicity?

*(Choose one)*

☐ Hispanic or Latino
☐ Not Hispanic or Non-Latino

**G15.** Which of these best describes your race?

*(Choose one or more)*

☐ American Indian or Alaska Native
☐ Asian
☐ Black or African American
☐ Native Hawaiian or Other Pacific Islander
☐ White

Thank you for taking the time to complete this questionnaire. Your contribution is valuable to us. The information you have provided will be kept private and any information that could identify you will not be associated directly with the results.

If you have any additional thoughts about any of the survey topics or the survey itself, please share them here:

Please return this questionnaire in the enclosed postage-paid return envelope or fax back to 1-XXX-XXX-XXXX.

If you have questions about this survey, please email us at PrecisionMedicine@rti.org or call us toll-free at 1-866-590-7469.