# Novel and Emerging Strategies in the Management of Gastrointestinal Cancers

### **CME** Information

#### TARGET AUDIENCE

This activity is intended for medical oncologists and other healthcare providers involved in the treatment of gastrointestinal (GI) cancers.

#### **OVERVIEW OF ACTIVITY**

The pace of oncology drug development has accelerated in recent years to previously unmatched levels. Fueled by an increased understanding of the biologic underpinnings of tumor development and progression, clinical research platforms largely focused on evaluating the potential benefits of novel targeted therapeutics possessing unique mechanisms of action and safety profiles have led to improved outcomes in a myriad of large and rigorous clinical trials. Although this dynamic appears to be prevalent in many corners of oncology, recent advancements in the management of several prominent GI cancers have made it particularly pronounced in this area.

The successes yielded by this rational approach to the design and evaluation of new therapies have provided medical oncologists and patients with many beneficial treatments, but the availability of this growing list of novel options may also pose a challenge to the practicing clinician who must maintain knowledge of appropriate clinical management strategies across a vast spectrum of liquid and solid tumors. To bridge the gap between research and patient care, this video presentation by Philip A Philip uses a review of recent relevant publications and presentations, ongoing clinical trials and clinical investigator treatment preferences to assist medical oncologists and other healthcare providers involved in the treatment of GI cancers with the formulation of up-to-date clinical management strategies.

#### LEARNING OBJECTIVES

- Appraise the biologic rationale for and available clinical data with approved and investigational anti-PD-1 and/ or anti-PD-L1 antibodies in the treatment of select GI cancers.
- Appreciate the rationale for and clinical evidence supporting the integration of novel treatment approaches for early pancreatic cancer.

- Recognize the mechanism of action of and available data with nanoliposomal irinotecan in the management of treatment-refractory metastatic pancreatic cancer, and develop strategies to incorporate this agent into patientcare algorithms.
- Consider available clinical research data documenting the efficacy of ramucirumab in metastatic colorectal and gastric or gastroesophageal junction cancers, and discern how this agent can be optimally integrated into clinical practice for patients with these diseases.
- Formulate a plan to include information about the left or right sidedness of colon cancer tumors in prognostication and systemic treatment decision-making.
- Develop an understanding of emerging Phase III efficacy data with commercially available multikinase inhibitors (eg, regorafenib and lenvatinib) for the management of relapsed/ refractory hepatocellular carcinoma.
- Evaluate available Phase III data with peptide receptor radionuclide therapy with <sup>177</sup>Lu-Dotatate for patients with GI neuroendocrine tumors progressing on somatostatin analogue therapy.
- Appreciate the FDA-approved indication for telotristat ethyl, and consider this information in the selection of patients with carcinoid syndrome-associated diarrhea who might benefit from treatment with this agent.
- Recall available and emerging data with other investigational agents currently in Phase III testing for various GI cancers, and, where applicable, refer eligible patients for trial participation or expanded access programs.

#### **ACCREDITATION STATEMENT**

Research To Practice is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

#### **CREDIT DESIGNATION STATEMENT**

Research To Practice designates this enduring material for a maximum of 1.25 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

# AMERICAN BOARD OF INTERNAL MEDICINE (ABIM) — MAINTENANCE OF CERTIFICATION (MOC)

Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to 1.25 Medical Knowledge MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABIM MOC credit.

Please note, this program has been specifically designed for the following ABIM specialty: **medical oncology**.

Personal information and data sharing: Research To Practice aggregates deidentified user data for program-use analysis, program development, activity planning and site improvement. We may provide aggregate and deidentified data to third parties, including commercial supporters. We do not share or sell personally identifiable information to any unaffiliated third parties or commercial supporters. Please see our privacy policy at **ResearchToPractice.com/Privacy-Policy** for more information.

#### HOW TO USE THIS CME ACTIVITY

This CME activity consists of a video component. To receive credit, the participant should review the CME information, watch the video, complete the Post-test with a score of 80% or better and fill out the Educational Assessment and Credit Form located at **ResearchToPractice.com/GrandRoundsGI18/CME**.

#### CONTENT VALIDATION AND DISCLOSURES

Research To Practice (RTP) is committed to providing its participants with high-quality, unbiased and state-of-theart education. We assess conflicts of interest with faculty, planners and managers of CME activities. Conflicts of interest are identified and resolved through a conflict of interest resolution process. In addition, all activity content is reviewed by both a member of the RTP scientific staff and an external, independent physician reviewer for fair balance, scientific objectivity of studies referenced and patient care recommendations.

**FACULTY** — The following faculty (and their spouses/partners) reported relevant conflicts of interest, which have been resolved through a conflict of interest resolution process:

#### **Presenting Faculty Member**

#### Philip A Philip, MD, PhD

Professor of Oncology and Pharmacology Director of GI and Neuroendocrine Tumors Vice President of Medical Affairs Karmanos Cancer Institute Wayne State University Detroit, Michigan

Advisory Committee: Bayer HealthCare Pharmaceuticals, Celgene Corporation, Genentech BioOncology, Halozyme Inc, Lilly, Merrimack Pharmaceuticals Inc, Novartis; Consulting Agreements: Celgene Corporation, Halozyme Inc, Lilly; **Contracted Research:** Bayer HealthCare Pharmaceuticals, Celgene Corporation, Lilly, Merck, Novartis; **Speakers Bureau:** Amgen Inc, Bayer HealthCare Pharmaceuticals, Celgene Corporation, Genentech BioOncology, Lilly, Merrimack Pharmaceuticals Inc, Novartis, Sanofi Genzyme.

#### **Project Steering Committee Members**

#### Tanios Bekaii-Saab, MD

Professor, Mayo Clinic College of Medicine and Science Co-Leader, GI Cancer Program Mayo Clinic Cancer Center Senior Associate Consultant Mayo Clinic Arizona Scottsdale, Arizona

**Consulting Agreements:** Amgen Inc, ARMO BioSciences, Bayer HealthCare Pharmaceuticals, Bristol-Myers Squibb Company, Celgene Corporation, Exelixis Inc, Genentech BioOncology, Ipsen Biopharmaceuticals Inc, Merck, Roche Laboratories Inc, SillaJen; **Contracted Research:** Bayer HealthCare Pharmaceuticals, Boehringer Ingelheim Pharmaceuticals Inc, Boston Biomedical Pharma Inc, Bristol-Myers Squibb Company, Celgene Corporation, Lilly.

#### Johanna C Bendell, MD

Director, GI Oncology Research Associate Director, Drug Development Unit Sarah Cannon Research Institute Nashville, Tennessee

**Contracted Research:** Abbott Laboratories, AbbVie Inc, Apexigen, AstraZeneca Pharmaceuticals LP, Bayer HealthCare Pharmaceuticals, Boehringer Ingelheim Pharmaceuticals Inc, Bristol-Myers Squibb Company, Celgene Corporation, Daiichi Sankyo Inc, Eisai Inc, EMD Serono Inc, Five Prime Therapeutics Inc, Forty Seven Inc, Genentech BioOncology, Gilead Sciences Inc, GlaxoSmithKline, Incyte Corporation, Kolltan Pharmaceuticals Inc, Leap Therapeutics Inc, Lilly, Macro-Genics Inc, MedImmune Inc, Merck, Novartis, OncoMed Pharmaceuticals Inc, Onyx Pharmaceuticals, an Amgen subsidiary, Pfizer Inc, Roche Laboratories Inc, Sanofi Genzyme, Stemcentrx, Taiho Oncology Inc, Takeda Oncology, TG Therapeutics Inc.

#### Axel Grothey, MD

Professor of Oncology Department of Medical Oncology Mayo Clinic Rochester, Minnesota

Advisory Committee: Amgen Inc, Bayer HealthCare Pharmaceuticals, Boehringer Ingelheim Pharmaceuticals Inc, Boston Biomedical Pharma Inc, Genentech BioOncology, Roche Laboratories Inc; Contracted Research: Bayer HealthCare Pharmaceuticals, Boehringer Ingelheim Pharmaceuticals Inc, Boston Biomedical Pharma Inc, Eisai Inc, Genentech BioOncology.

#### Howard S Hochster, MD

Associate Director (Clinical Research), Yale Cancer Center Professor of Medicine, Yale School of Medicine New Haven, Connecticut **Consulting Agreements:** Bayer HealthCare Pharmaceuticals, Bristol-Myers Squibb Company, Genomic Health Inc.

#### Heinz-Josef Lenz, MD

Professor of Medicine and Preventive Medicine J Terrence Lanni Chair in Cancer Research Co-Director, USC Center for Molecular Pathways and Drug Discovery Keck School of Medicine, University of Southern California Associate Director of Adult Oncology Co-Director, Colorectal Center Scientific Director, Cancer Genetics Unit USC/Norris Comprehensive Cancer Center Los Angeles, California

#### Advisory Committee and Consulting Agreements: Bayer

HealthCare Pharmaceuticals, Bristol-Myers Squibb Company, EMD Serono Inc, Genentech BioOncology, Roche Laboratories Inc; **Contracted Research:** Bayer HealthCare Pharmaceuticals, Bristol-Myers Squibb Company, EMD Serono Inc, Genentech BioOncology, Merck, Roche Laboratories Inc.

#### Bert H O'Neil, MD

Professor of Medicine

Director, Phase I and GI Malignancies Programs Indiana University Simon Cancer Center Indianapolis, Indiana

**Advisory Committee:** Amgen Inc, Bayer HealthCare Pharmaceuticals, Genentech BioOncology; **Speakers Bureau:** Bayer HealthCare Pharmaceuticals.

**PROJECT CHAIR** — **Dr Love** is president and CEO of Research To Practice, which receives funds in the form of educational grants to develop CME activities from the following commercial interests: AbbVie Inc, Acerta Pharma, Adaptive Biotechnologies, Agendia Inc, Agios Pharmaceuticals Inc, Amgen Inc, Ariad Pharmaceuticals Inc, Array BioPharma Inc, Astellas Pharma Global Development Inc, AstraZeneca Pharmaceuticals LP, Baxalta Inc, Bayer HealthCare Pharmaceuticals, Biodesix Inc, bioTheranostics Inc, Boehringer Ingelheim Pharmaceuticals Inc, Boston Biomedical Pharma Inc, Bristol-Myers Squibb Company, Celgene Corporation, Clovis Oncology, CTI BioPharma Corp, Dendreon Pharmaceuticals Inc, Eisai Inc, Exelixis Inc, Foundation Medicine, Genentech BioOncology, Genomic Health Inc, Gilead Sciences Inc, Halozyme Inc, ImmunoGen Inc, Incyte Corporation, Infinity Pharmaceuticals Inc, Ipsen Biopharmaceuticals Inc, Janssen Biotech Inc, administered by Janssen Scientific Affairs LLC, Jazz Pharmaceuticals Inc, Kite Pharma Inc, Lexicon Pharmaceuticals Inc, Lilly, Medivation Inc, a Pfizer Company, Merck, Merrimack Pharmaceuticals Inc, Myriad Genetic Laboratories Inc, NanoString Technologies, Natera Inc, Novartis, Novocure, Onyx Pharmaceuticals, an Amgen subsidiary, Pfizer Inc, Pharmacyclics LLC, an AbbVie Company, Prometheus Laboratories Inc, Puma Biotechnology Inc, Regeneron Pharmaceuticals Inc, Sanofi Genzyme, Seattle Genetics, Sigma-Tau Pharmaceuticals Inc, Sirtex Medical Ltd, Spectrum Pharmaceuticals Inc, Taiho Oncology Inc, Takeda Oncology, Tesaro Inc, Teva Oncology and Tokai Pharmaceuticals Inc.

#### **RESEARCH TO PRACTICE STAFF AND EXTERNAL**

**REVIEWERS** — The scientific staff and reviewers for Research To Practice have no relevant conflicts of interest to disclose.

This educational activity contains discussion of published and/ or investigational uses of agents that are not indicated by the Food and Drug Administration. Research To Practice does not recommend the use of any agent outside of the labeled indications. Please refer to the official prescribing information for each product for discussion of approved indications, contraindications and warnings. The opinions expressed are those of the presenters and are not to be construed as those of the publisher or grantors.

This activity is supported by educational grants from Boston Biomedical Pharma Inc, Exelixis Inc, Lexicon Pharmaceuticals Inc, Lilly, Merck and Merrimack Pharmaceuticals Inc.

#### Hardware/Software Requirements:

A high-speed Internet connection A monitor set to 1280 x 1024 pixels or more Internet Explorer 11 or later, Firefox 56 or later, Chrome 61 or later, Safari 11 or later, Opera 48 or later Adobe Flash Player 27 plug-in or later Adobe Acrobat Reader (Optional) Sound card and speakers for audio

Last review date: February 2018

Expiration date: February 2019

## Select Publications

Becerra C et al. Phase Ib/II study of cancer stem cell (CSC) inhibitor BBI608 combined with paclitaxel in advanced gastric and gastroesophageal junction (GEJ) adenocarcinoma. *Proc ASCO* 2015; Abstract 4069.

Bekaii-Saab T et al. Identifying and targeting cancer stem cells in the treatment of gastric cancer. *Cancer* 2017;123(8):1303-12.

Bennouna J et al; ML18147 Study Investigators. Continuation of bevacizumab after first progression in metastatic colorectal cancer (ML18147): A randomised phase 3 trial. *Lancet Oncol* 2013;14(1):29-37.

Bruix J et al; RESORCE Investigators. Regorafenib for patients with hepatocellular carcinoma who progressed on sorafenib treatment (RESORCE): A randomised, double-blind, placebo-controlled, phase 3 trial. *Lancet* 2017;389(10064):56-66.

Chen LT et al. Expanded analyses of napoli-1: Phase 3 study of MM-398 (nal-IRI), with or without 5-fluorouracil and leucovorin, versus 5-fluorouracil and leucovorin, in metastatic pancreatic cancer (mPAC) previously treated with gemcitabine-based therapy. Gastrointestinal Cancers Symposium 2015;Abstract 234.

Diaz LA Jr et al. **KEYNOTE-177: Randomized phase III study of pembrolizumab versus investigator-choice chemotherapy for mismatch repair-deficient or microsatellite instability-high metastatic colorectal carcinoma.** Gastrointestinal Cancers Symposium 2017;**Abstract TPS815**.

Dung TL et al. Programmed death-1 blockade in mismatch repair deficient colorectal cancer. Proc ASCO 2016; Abstract 103.

El-Khoueiry A et al. Nivolumab in patients with advanced hepatocellular carcinoma (CheckMate 040): An open-label, non-comparative, phase 1/2 dose escalation and expansion trial. *Lancet* 2017;389(10088):2492-502.

Finn RS et al. **KEYNOTE-240: Randomized phase III study of pembrolizumab versus best supportive care for second-line advanced hepatocellular carcinoma.** Gastrointestinal Cancers Symposium 2017; **Abstract TPS503**.

Giannakis M et al. Genomic correlates of immune-cell infiltrates in colorectal carcinoma. Cell Reports 2016;15(4):857-65.

Hackert T et al. Locally advanced pancreatic cancer: Neoadjuvant therapy with folfirinox results in resectability in 60% of the patients. *Ann Surg* 2016;264(3):457-63.

Hegde PS et al. The where, the when, and the how of immune monitoring for cancer immunotherapies in the era of check-point inhibition. *Clin Cancer Res* 2016;22(8):1865-74.

Imai K, Yamamoto H. Carcinogenesis and microsatellite instability: The interrelationship between genetics and epigenetics. *Carcinogenesis* 2008;29(4):673-80.

Kang YK et al. Nivolumab (ONO-4538/BMS-936558) as salvage treatment after second or later-line chemotherapy for advanced gastric or gastro-esophageal junction cancer (AGC): A double-blinded, randomized, phase III trial. Gastrointestinal Cancers Symposium 2017; Abstract 2.

Katz MH et al. Preoperative modified FOLFIRINOX treatment followed by capecitabine-based chemoradiation for borderline resectable pancreatic cancer: Alliance for Clinical Trials in Oncology trial AO21101. *JAMA Surg* 2016;151(8):e161137.

Kim JM, Chen DS. Immune escape to PD-L1/PD-1 blockade: Seven steps to success (or failure). Ann Oncol 2016;27(8):1492-504.

Kwekkeboom DJ, Krenning EP. **Peptide receptor radionuclide therapy in the treatment of neuroendocrine tumors.** *Hematol Oncol Clin N Am* 2016;30(1):179-91.

Llosa NJ et al. The vigorous immune microenvironment of microsatellite instable colon cancer is balanced by multiple counterinhibitory checkpoints. *Cancer Discov* 2015;5(1):43-51.

Molina-Cerrillo J et al. Inhibition of peripheral synthesis of serotonin as a new target in neuroendocrine tumors. *Oncologist* 2016;21(6):701-7.

Neoptolemos JP et al; European Study Group for Pancreatic Cancer. **Comparison of adjuvant gemcitabine and capecitabine with gemcitabine monotherapy in patients with resected pancreatic cancer (ESPAC-4): A multicentre, open-label, randomised, phase 3 trial.** *Lancet* 2017;389(10073):1011-24.

Neoptolemos JP et al. A randomized, double-blind trial evaluating the palliative benefit of either continuing pamidronate or switching to zoledronate in patients with high-risk bone metastases from breast cancer (The Odyssey Study). *Proc ASCO* 2016; Abstract LBA4006.

Overman MJ et al. Nivolumab ± ipilimumab in treatment (tx) of patients (pts) with metastatic colorectal cancer (mCRC) with and without high microsatellite instability (MSI-H): CheckMate-142 interim results. *Proc ASCO* 2016;Abstract 3501.

Petrelli F et al; Gruppo Italiano per lo Studio dei Carcinomi dell'Apparato Digerente (GISCAD). **FOLFIRINOX-based neoadjuvant** therapy in borderline resectable or unresectable pancreatic cancer: A meta-analytical review of published studies. *Pancreas* 2015;44(4):515-21.

Suker M et al. **FOLFIRINOX for locally advanced pancreatic cancer: A systematic review and patient-level meta-analysis.** *Lancet Oncol* 2016;17(6):801-10.

Tabernero J et al; RAISE Study Investigators. Ramucirumab versus placebo in combination with second-line FOLFIRI in patients with metastatic colorectal carcinoma that progressed during or after first-line therapy with bevacizumab, oxaliplatin, and a fluoropyrimidine (RAISE): A randomised, double-blind, multicentre, phase 3 study. *Lancet Oncol* 2015;16(5):499-508.

Van Cutsem E et al. Addition of aflibercept to fluorouracil, leucovorin, and irinotecan improves survival in a phase III randomized trial in patients with metastatic colorectal cancer previously treated with an oxaliplatin-based regimen. *J Clin Oncol* 2012;30(28):3499-506.

Venook A et al. Effect of first-line chemotherapy combined with cetuximab or bevacizumab on overall survival in patients with KRAS wild-type advanced or metastatic colorectal cancer: A randomized clinical trial. *JAMA* 2017;317(23):2393-401.

Venook A et al. Primary tumor location as an independent prognostic marker from molecular features for overall survival in patients with metastatic colorectal cancer: Analysis of CALGB/SWOG 80405 (Alliance). *Proc ASCO* 2017;Abstract 3503.

Venook A et al. Impact of primary (1°) tumor location on overall survival (OS) and progression-free survival (PFS) in patients (pts) with metastatic colorectal cancer (mCRC): Analysis of CALGB/SWOG 80405 (Alliance). *Proc ASCO* 2016; Abstract 3504.

Wang-Gillam A et al. Nanoliposomal irinotecan with fluorouracil and folinic acid in metastatic pancreatic cancer after previous gemcitabine-based therapy (NAPOLI-1): A global, randomised, open-label, phase 3 trial. *Lancet* 2016;387(10018):545-57.