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## Boston University School of Medicine

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May 16, 1991

Dear Member of the Media:

Researchers from Boston University School of Medicine (BUSM) will present abstracts on a variety of topics at the 92nd annual meeting of the American Gastroenterological Association. The meeting will be held May 19-22, 1991, in New Orleans, Louisiana.

Here are brief descriptions of some of the presentations:

- "Calcium Preferentially Accelerates Gallbladder Mucin induced Cholesterol Monohydrate Crystal Nucleation Rather than Crystal Growth in Model Bile"--N.H. Afdhal, M.D., an assistant professor of medicine at BUSM, will discuss a study that investigated how gallbladder mucin, a protein found in all humans and whose concentration is increased in patients with gallstones, affects the growth of cholesterol gallstones. Afdhal and his colleagues measured how incubated cholesterol crystals--precursors for the formation of cholesterol gallstones--grow in model bile that simulates the conditions of bile found in patients with gallstones. They learned that physiological quantities of mucin accelerate the growth of crystal gallstones, and, in the presence of substances such as calcium and magnesium, mucin increases the number of crystals. These results may ultimately help scientists find a way to inhibit the production of mucin and prevent gallstones.

- "Ferret and Rabbit Parietal Cell Inhibition is a Property Common to Helicobacter Species"--J. Hoffman, M.D., a senior resident in medicine at BUSM, will present the findings of a study of helicobacter pylori--suspected of inhibiting acid production in human stomachs--in the stomachs of ferrets, cats and rabbits to confirm that it functioned in this manner. Scientists have suspected that helicobacter bacteria, which colonizes in the human stomach, causes ulcers and gastritis by inhibiting acid secretion from the parietal cells that line the stomach wall. Hoffman and his colleagues learned that the three different helicobacter species from ferrets, cats and man inhibited acid secretion in the two animal models under study. They also discovered that helicobacter bacteria do not have a toxic effect on parietal cells rather they secrete a substance that turns off the parietal cells. Their experimental evidence also suggests that the acid inhibition by helicobacter bacteria works by a different mechanism than that of the commonly used ulcer drugs. These two findings suggest that a method that inhibits the growth of helicobacter bacteria could lead to a cure for ulcers and gastritis.

- "Exogenous Prostaglandin (PG) Acceleration of Cholesterol Monohydrate Crystal (ChMC) Nucleation is Mediated by Non Mucin Glycoproteins in the Cholesterol Fed Prairie Dog"--N.H. Afdhal, M.D., an assistant professor of medicine at BUSM, will relate the findings of a study that investigated the effects of cholesterol and prostaglandins, small fat molecules, in the formation of gallstones. Various groups of animals were fed either high levels of cholesterol, high amounts of cholesterol and prostaglandins or no cholesterol at all. A higher incidence of gallstone formation was observed among the group fed with high cholesterol and prostaglandins, indicating that this type of diet increases the secretion of mucin and non-mucin proteins--the

proteins required for the formation and the growth of gallstones. This study suggests that taking antiprostaglandins, such as aspirin, may help control the secretion of mucin proteins, and thus, prevent the development of gallstones.


- "Growth Inhibition and Differentiation are Independantly Regulated in HT29 Colon Cancer Cells"--Paul Schroy, M.D., an assistant professor of medicine at BUSM, will relate the findings of a study that investigated whether HMBA, a chemical agent that has been shown to inhibit colon tumor cell growth, actually induces intestinal differentiation or, in other words, causes the tumor cells to resume the characteristics of normal mature cells. Schroy and his colleagues compared the effects of HMBA and those of sodium butaryte, a substance known to induce intestinal differentiation, to determine whether HMBA also causes intestinal differentiation. They concluded that although HMBA may have a role in the treatment of colon cancer, it does not effect cancer cells the same way sodium butaryte does.

- "Viscous Fingering, a Physico-Chemical Property of Gastric Mucin, May Contribute to Gastric Mucosal Acid Resistance"--K.R. Bhaskar, Ph.D., an associate research professor of medicine at BUSM, will discuss the findings of a study which looked at how the stomach protects itself from the hydrochloric acid it manufactures. Bhaskar and his colleagues have demonstrated that hydrochloric acid travels through solutions of stomach mucus by a process called viscous fingering--a hydrodynamic phenomenon where a low viscosity fluid such as water displaces a high viscosity fluid such as oil. It was further learned that acid thickens the consistency of mucus and viscous fingering was not observed when the mucus was in an acidic solution. This offers a possible explanation of how secreted acid reaches the stomach cavity to digest food but is prevented by the mucus layer from diffusing back and, thus, protects the stomach epithelium. Understanding the conditions that control the movement of hydrochloric acid will help physicians treat people with ulcers and other gastrointestinal disorders.

- "Human Colonic Carcinoma Cells Express the Cell Adhesion Molecule ICAM-1"--Ciaran Kelly, M.D., an assistant professor of medicine at BUSM, will present the findings of a study that investigated the role of ICAM-1 in fighting colon cancer. Kelly and his colleagues found that ICAM-1, a surface molecule found on colon cancer cells but not found on normal colon cells, signals to the body that the cell is abnormal and acts as a magnet that attracts lymphocytes to kill these cancer cells. Kelly concluded that understanding the role of ICAM-1 expression is an essential step in understanding why certain colon cancer cells are able to evade our immune defense systems and invade the body.

If you are interested in any of the above abstracts or would like to interview any of the presenters, please give me or Betty Russell a call at (617) 638-8491.

Sincerely,



Lisa Kushnir  
Media Relations Assistant  
Boston University Medical Center